

**ECLA****EUROPEAN CLASSIFICATION****H04K****SECRET COMMUNICATION; JAMMING OF COMMUNICATION****Note**

In this subclass, the following expression is used with the meaning indicated:

- "secret communication" includes secret line and radiation transmission systems, i.e. those in which apparatus at the transmitting station modifies the signal in such a way that the information cannot be intelligibly received without corresponding modifying apparatus at the receiving station.

**H04K1/00**

**Secret communication** (ciphering or deciphering apparatus per se G09C; systems with reduced bandwidth or suppressed carrier [H04B1/66](#); spread spectrum techniques [H04B1/69](#); by using a sub-carrier [H04B14/08](#); by multiplexing H04J; transmission systems for secret digital information [H04L9/00](#); secret or subscription television systems [H04N7/16](#), [H04N21/00](#)) [C1207]

**H04K1/00B**

- [N: by varying carrier frequency at or within predetermined or random intervals, e.g. wobbling ([H04K1/04](#) takes precedence)]

**H04K1/00C**

- [N: by varying or inverting the phase, at periodic or random intervals]

**H04K1/02**

- by adding a second signal to make the desired signal unintelligible [N: (selective content distribution involving video stream encryption [H04N21/2347](#), [H04N21/4408](#); selective content distribution involving multiplex stream encryption )] [C1207]

**H04K1/02C**

- [N: using an analogue chaotic signal] [N1204]

**H04K1/04**

- by frequency scrambling, i.e. by transposing or inverting parts of the frequency band or by inverting the whole band

**H04K1/06**

- by transmitting the information of elements thereof at unnatural speeds or in jumbled order or backwards

**H04K1/08**

- by varying the polarisation of transmitted waves

**H04K1/10**

- by using two signals transmitted simultaneously or successively [C9512]

**H04K3/00**

**Jamming of communication; Counter-measures** (counter-measures used in radar or analogous systems [G01S7/00](#); [N: in radar [G01S7/36](#), [G01S7/38](#); in lidar [G01S7/495](#); in sonar [G01S7/537](#)]) [C9706]

**Notes** [N1208]

1. This group covers: "Jamming", only when it means purposefully trying to interfere with the physical transmission and reception of communication. Provided this condition is met, this group covers devices and methods for: (a) jamming of communication: i. jamming by intentionally decreasing the signal to noise ratio ii. deceptive jamming iii. passive jamming iiiii. destructive jamming (b) countermeasures against jamming (c) countermeasures against undesired self-jamming resulting from jamming (d) countermeasures against surveillance, interception or detection (e) other electronic countermeasures using or

against electromagnetic or acoustic waves (f) signal detection techniques used in relation to i. jamming: for interception and monitoring of the jamming target signal ii. anti-jamming: for jamming detection, iii. anti-surveillance: for surveillance detection (g) jamming for testing or assessing countermeasures (h) jamming used to prevent: - cellular phone communication i. in a vehicle during motion ii. in particular areas, including prisons, hospitals, planes, petrol stations, theatres iii. to trigger RCIEDs - reception of positioning data using GPS - wireless communication in ad hoc networks or in sensor networks - exchange of data between wirelessly connected devices or device units, on Bluetooth, infrared or near field links - unauthorized access to network, service or information, including: i. access to a WLAN network ii. access to information stored in contactless carriers, including RFID carriers - transmission of an alarm, against burglary or vehicle theft - remote control of devices - surveillance i. of speech in meeting rooms ii. of electromagnetic emissions from a computer screen - interception or detection of a wirelessly transmitted signal] 2. In this group, the following acronyms are used: GPS = global positioning system RCIED = remote controlled improvised explosive device RFID = radio frequency identification WLAN= wireless local area network

[N: **WARNING**

Groups [H04K3/00](#) -[H04K3/94](#) do not correspond to former or current IPC groups.

Concordance ECLA : IPC for these groups is as follows: - [H04K3/00](#) - [H04K3/94](#) :

[H04K3/00](#)

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- H04K3/20 . [N: Countermeasures against jamming (in radar G01S7/36; interference suppression in receivers H04B1/10)] [N1205]
- H04K3/22 . . [N: including jamming detection and monitoring] [N1205]
- H04K3/22A . . . [N: wherein jamming detection includes detecting the absence or impossibility of intelligible communication on at least one channel] [N1205]
- H04K3/22B . . . [N: with countermeasures at transmission and/or reception of the jammed signal, e.g. stopping operation of transmitter or receiver, nulling or enhancing transmitted power in direction of or at frequency of jammer] [N1205]
- H04K3/22B1 . . . . [N: Selection of non-jammed channel for communication (spectrum sharing arrangements H04W16/14; selection of wireless resources by user or terminal H04W72/02)] [N1205]
- H04K3/22B2 . . . . [N: Elimination in the received signal of jamming or of data corrupted by jamming (interference suppression in receivers H04B1/10)] [N1205]
- H04K3/25 . . [N: based on characteristics of target signal or of transmission (as countermeasure against surveillance H04K3/00Z2T), e.g. using direct sequence spread spectrum or fast frequency hopping (spread spectrum techniques H04B1/69)] [N1205]
- H04K3/25A . . . [N: based on redundancy of transmitted data, transmission path or transmitting source] [N1205]
- H04K3/28 . . [N: with jamming and anti-jamming mechanisms both included in a same device or system, e.g. wherein anti-jamming includes prevention of undesired self-jamming resulting from jamming] [N1205]
- H04K3/40 . [N: Jamming having variable characteristics] [N1205]
- H04K3/41 . . [N: characterized by the control of the jamming activation or deactivation time (control of jamming activation and deactivation time only for the purpose of alternating between jamming mode and target monitoring mode H04K3/00C10)] [N1205]
- H04K3/41B . . . [N: based on motion status or velocity, e.g. for disabling use of mobile phones in a vehicle] [N1206]

H04K3/42	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: characterized by the control of the jamming frequency or wavelength] [N1205]</li> </ul> </li> </ul>
H04K3/43	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: characterized by the control of the jamming power, signal-to-noise ratio or geographic coverage area] [N1205]</li> </ul> </li> </ul>
H04K3/44	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: characterized by the control of the jamming waveform or modulation type] [N1205]</li> </ul> </li> </ul>
H04K3/45	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: characterized by including monitoring of the target or target signal, e.g. in reactive jammers or follower jammers for example by means of an alternation of jamming phases and monitoring phases, called "look-through mode"] [N1205]</li> </ul> </li> </ul>
H04K3/46	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: characterized in that the jamming signal is produced by retransmitting a received signal, after delay or processing] [N1205]</li> </ul> </li> </ul>
H04K3/60	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: Jamming involving special techniques] [N1205]</li> </ul> </li> </ul>
H04K3/62	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: by exposing communication, processing or storing systems to electromagnetic wave radiation, e.g. causing disturbance, disruption or damage of electronic circuits, or causing external injection of faults in the information] [N1205]</li> </ul> </li> </ul>
H04K3/65	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: using deceptive jamming or spoofing, e.g. transmission of false signals for premature triggering of RCIED, for forced connection or disconnection to/from a network or for generation of dummy target signal] [N1205]</li> </ul> </li> </ul>
H04K3/68	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: using passive jamming, e.g. by shielding or reflection (shielding of apparatus or components against electric or magnetic field H05K9/00)] [N1205]</li> </ul> </li> </ul>
H04K3/80	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: Jamming or countermeasure characterized by its function] [N1205]</li> </ul> </li> </ul>
H04K3/82	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: related to preventing surveillance, interception or detection] [N1205]</li> </ul> </li> </ul>
H04K3/82A	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: by detecting the presence of a surveillance, interception or detection] [N1205]</li> </ul> </li> </ul> </li> </ul>
H04K3/82B	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: by jamming] [N1205]</li> </ul> </li> </ul> </li> </ul>
H04K3/82C	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: using characteristics of target signal or of transmission (as countermeasure against jamming H04K3/00A4), e.g. using direct sequence spread spectrum or fast frequency hopping (spread spectrum techniques H04B1/69)] [N1205]</li> </ul> </li> </ul> </li> </ul>
H04K3/84	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: related to preventing electromagnetic interference in petrol station, hospital, plane or cinema] [N1205]</li> </ul> </li> </ul>
H04K3/86	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: related to preventing deceptive jamming or unauthorized interrogation or access, e.g. WLAN access or RFID reading (record carriers with integrated circuit chips including means for preventing undesired reading or writing from or to record carriers by hindering electromagnetic reading or writing G06K19/073A2; arrangements for sensing record carriers including arrangements for protecting the interrogation against piracy attacks G06K7/10A6)] [N1205]</li> </ul> </li> </ul>
H04K3/88	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: related to allowing or preventing alarm transmission] [N1205]</li> </ul> </li> </ul>
H04K3/90	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: related to allowing or preventing navigation or positioning, e.g. GPS] [N1205]</li> </ul> </li> </ul>
H04K3/92	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: related to allowing or preventing remote control] [N1205]</li> </ul> </li> </ul>
H04K3/94	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>[N: related to allowing or preventing testing or assessing] [N1205]</li> </ul> </li> </ul>