ZigBee

Given all the information, it was chosen the signal transfer, but using a set of protocols as is indicated by NASA (2), which give security when using the aircraft. Thus, the communication without cables, it was chosen to implement ZigBee, which is the name of the specification of a set of protocols of high level wireless communication for its utilization with digital broadcasting of low consume, based on the standard IEEE 802.15.4 of Wireless Personal Area Network (WPAN) (5). Its objective is to enable wireless networks with control capacity, monitoring of low cost as well as low reliable consumption. ZigBee is for private use, and its main characteristic is that it is very reliable. Which objective is to enable wireless networks with control capacities and monitoring that are reliable, low cost and energy consumption.

This system has a great number of alternative routes to guarantee that the information arrives to its destination. It is used currently in the robotics world (smart house) and one advantage of using this technology is that its cover range is ideal for aircrafts. Its performance is not affected by networks (like WiFi or Bluetooth) because its low data transmission rate and the characteristics of the same protocol.

-It is of private use, has a high reliability level, and low cost.
-Its performance seems to not be affected by other networks (like WiFi or Bluetooth) because its low data transmisión rate and characteristics of the same protocol.
-Besides, the system has a great amount of alternative routes, so the information always arrives to its destination.
-In order to implement a ZigBee network, it must be composed by:
  -A stand-alone coordinator
  -One or more routers
  -One or more terminal devices

ZigBee Xbee: A Xbee module can be configured so it accomplished the three functions.

-Coordinator:
Has the task to form the network
Deals with all nodes' directions
Deals with security
Deals with auto-regeneration

-Router:
It joins a network formed by the coordinator
It can deal and receive its own data, in other words, the data coming out of it own ports
It has the capacity of rooting or routing the traffic of different nodes.
Its usage is optional if they’re no distant nodes (out of range).

-Terminal device:
Sends/receives its data.