Summary

LoRaWAN (Long-Range Wide Area Network) is a type of data communication for wide area wireless   
It is designed to allow long-range data acquisition at a low bit rate between connected sensors   
LoRa is able to transmit data over large distances with low power .  
Like (LPWAN ) low-power wide -area network,   
LoRa (Long -Range ) is a patented digital wireless data communication IoT technology developed by   
LoRa transmits over license -free Megahertz radio frequency bands like 169 MHz, 433 MHz, 868 MHz   
LoRa enables very -long-range transmissions (more than up to   
The technology is presented in two parts — LoRa, the physical layer, and; the communication protocol   
Network), an open source communication protocol defined by the LoRa Alliance consortium .  
Thus, LoRaWAN defines the communication protocol and system architecture for the network, while the   
LoRa physical layer enables the long -range communication link .  
Physical and Communication layers of a LoRaWAN Network .  
LoRa and LoRaWAN Network Topology   
the data between the sensor nodes and the network server.  
Communication between the sensor nodes and the base stations goes over the wireless channel utilizing   
the LoRa physical layer, whilst the connection between the gateways and the central server are handled   
• End Nodes transmit directly to all gateways within range, using LoRa.  
• Gateways relay messages between end devices and a central network server using IP.  
The End Nodes are LoRa embedded sensors.  
The LoRaWAN end nodes are typically battery powered (Class A and Class B) sensors .  
The LoRa sensors use line of sight communications.  
The LoRa sensors transmit data to the LoRa gateways.  
the standard IP protocol and transmit the data received from the LoRa embedded sensors to the Internet   
The gateway \ devices are always connected to a power source.  
• Low Powered sensors that can cover a wide area measured in miles   
• Low power means long battery life for devices.  
• Single LoRa Gateway device is designed to take care of thousands of end devices or nodes