

Research Based Final Year Project - Abstract

The Things Network - The Things Network is an open, decentralized and crowd sourced Internet of Things data network.

The technology used by **The Things Network** is **LoRaWAN** and it allows for things to talk to the internet without 2G/3G/4G/5G or WiFi connections. Therefore no WiFi codes and no mobile subscriptions.

LoRaWAN is a media access control (MAC) protocol for wide area networks. It is designed to allow low-powered devices to communicate with Internet-connected applications over long range wireless connections.

Normally there are two frequency range LoRaWAN gateways used globally, 868 MHz and 915 MHz. After some research we narrowed down to two gateways for both frequency ranges, RG 191-ND and RG 186-ND. In the table below we have classified there properties.

Due to lack of information of license free Frequency Bands we need to ask that can we use **902 MHz~928 MHz** or **863 MHz~870 MHz** for LoRaWAN in Pakistan.

	RG 191 -ND	RG 186 - ND
<u>Categories</u>	Networking Solutions, Gateways, Routers	Networking Solutions, Gateways, Routers
<u>Manufacturer</u>	Laird - Wireless & Thermal Systems	Laird - Wireless & Thermal Systems
<u>Series</u>	Sentrius	Sentrius
<u>Part Status</u>	Active	Active
<u>Function</u>	Gateway	Gateway
<u>Modulation or Protocol</u>	802.11a/b/g/n, Bluetooth v4.0, LoRaWAN	802.11a/b/g/n, Bluetooth v4.0, LoRaWAN
<u>Frequency</u>	902MHz ~ 928MHz, 2.4GHz, 5GHz	863MHz ~ 870MHz, 2.4GHz, 5GHz
<u>Applications</u>	General Purpose	General Purpose
<u>Interface</u>	Ethernet	Ethernet
<u>Sensitivity</u>	-127dBm	-125dBm
<u>Power - Output</u>	28dbm	25dBm
<u>Data Rate (Max)</u>	65Mbps	65Mbps
<u>Features</u>	IoT Gateway	IoT Gateway
<u>Voltage - Supply</u>	12V	12V