

10 Things About LoRaWAN® & NB-IoT

Complementary Solutions Based on Your Needs

1 Ecosystem

LoRaWAN

LoRa Alliance® & ITU standard

Recognized as a LPWAN Standard by the International Telecommunication Union

NB-IoT

3GPP,
GSMA

2 Spectrum

LoRaWAN

Unlicensed (ISM sub-GHz)

LoRa® is optimized for ultra low power, long range IoT sensors as the spectrum is free

NB-IoT

Licensed (LTE spectrum)

NB-IoT uses expensive licensed cellular spectrum, optimized for spectrum efficiency

3 Deployment Status

LoRaWAN

Worldwide deployments in 177 countries, with over 225 million end nodes, 163 network operators and over 2.7 million gateways as of December 2021

NB-IoT

Approximately 64 countries
April 2021 (LTE-M or NB-IoT)

4 Deployment Options

LoRaWAN

Flexible

Public, private, community, or hybrid networks with indoor or outdoor installations

NB-IoT

Fixed

Public networks on 4G/LTE cellular towers

5 Protocol

LoRaWAN

Asynchronous

Sensors featuring LoRaWAN send data when needed extending battery life (Class-A mode)

NB-IoT

Synchronous

NB-IoT maintains connection to the cellular network even if no data is to be sent. Establishing a connection takes significant time and consumes battery life

6 Transmit Current

LoRaWAN

18mA at 10dBm
and 84mA at 20dBm

Modulation differences allow LoRaWAN to be supported by very low cost batteries including coin cell

NB-IoT

~220mA at 23dBm
and 100mA at 13dBm

7 Receive Current

LoRaWAN

~5mA

LoRaWAN provides lower sensor BOM costs and longer battery life for remote sensors (3-5x lower power overall)

NB-IoT

~40mA

Communication mode between device and cell network consumes over 110mA on average for several 10s of seconds. Protocol overhead has significant impact to battery life for devices that will need 3, 5 or 10+ years of operation

8 Data Rates

LoRaWAN

~293bps – 50kbps

NB-IoT

~20kbps uplink
(normal coverage)

9 Link Budget (MCL)

LoRaWAN

155dB – 170dB best case

LoRaWAN MCL varies depends on regional regulatory limits (e.g., FCC, ETSI)

NB-IoT

164dB best case

NB-IoT 164dB requires significant repetitions for remote sensors at a low bit rate to be able to support remote sensors

10 Mobility

LoRaWAN

Yes

NB-IoT

Limited to idle mode cell reselection

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