Kona Mega FAQ

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#1 Why is the minimum reported RSSI -125dBm?

The RSSI value is reporting the sum of the receive power plus the noise in the channel. So for the cases of low or negative SNR, the RSSI value will be dominated by the thermal noise in the channel (+ noise figure). Using the received SNR value, an enhanced RSSI can be calculated using the following equation:

S_dBm = RSSI_dBm - 10*Log10(1+10^(-SNR_dB/10))

The equation reduces to the following at extreme values:

S_dBm = RSSI_dBm for large SNR_dB values

S_dBm = RSSI_dBm +SNR_dB for small SNR_dB values

#2 How can I install and run Loriot PF on my Kona

#2 How can I install and run Loriot PF on my Kona Mega GW?

Please see the LORIOT section found in the FAQ here.

#3 Does Kona Mega GW require any lightning arrester or surge protector?

The Kona Mega Gateway contains primary lightning surge suppression on the Direct DC power port, the Copper Ethernet port, the GPS antenna port and the LoRa RF antenna ports. Thus, it won' require any additional lightning arrester or surge protector.

#4 What is the difference between "tmms" and "tmst" timestamps in the Rx packet?

- **tmms** is available only when Gateway connects with GPS. It is basically GPS time.
- **tmst** is created by SX1301 when the Gateway receives packet from the device.

#5 What are the typical Rx sensitivity and SNR values as a function of LoRaWAN data-rate for Kona Mega gateway supporting US915 and EU868 ISM bands?

The Kona Mega gateway has a custom RF front-end that optimizes RF linearity and noise figure performance. The table below provides information on typical Rx sensitivity and SNR values as a function of LoRaWAN data rate for US915 and EU868 ISM bands.

North America (US915)							
BW (kHz)	Data Rate	SF	Required SNR (dB) at 10% PER	Thermal Noise Floor (dBm)	Typical Gateway Noise Figure (dB)	Total Noise Floor (dBm)	Typical Gateway Rx Sensitivity (dBm)
125	0	10	-15	-123.0	3	-120.0	-135.0
125	1	9	-12.5	-123.0	3	-120.0	-132.5

125	2	8	-10	-123.0	3	-120.0	-130.0
125	3	7	-7.5	-123.0	3	-120.0	-127.5
500	4	8	-10	-117.0	3	-114.0	-124.0
Europe (EU868)							
BW (kHz)	Data Rate	SF	Required SNR (dB) @ 10% PER	Thermal Noise Floor (dBm)	Typical Gateway Noise Figure (dB)	Total Noise Floor (dBm)	Typical Gateway Rx Sensitivity (dBm)
125	0	12	-20	-123.0	3	-120.0	-140.0
125	1	11	-17.5	-123.0	3	-120.0	-137.5
125	2	10	-15	-123.0	3	-120.0	-135.0
125	3	9	-12.5	-123.0	3	-120.0	-132.5
125	4	8	-10	-123.0	3	-120.0	-130.0
125	5	7	-7.5	-123.0	3	-120.0	-127.5
250	6	7	-7.5	-120.0	3	-117.0	-124.5

#6 What is the advantage of using two antennas as opposed to one?

- The main benefit for using two antennas as opposed to one is to implement Receiver Diversity in the gateway.

- Receiver Diversity refers to the general principle of using multiple (usually two) antennas to take advantage of the very low probability of simultaneous dropouts at two different antenna locations. Please note that using multiple antennas to increase Receiver Diversity will prevent you from receiving on all 64 channels as a result of the overlapping channels. Using two antennas, with no overlapping channels will not increase receiver diversity.

- Because multiple antennas offer a receiver several observations/perspectives of the same signal, Antenna Diversity(Use of multiple antennas) is especially effective at mitigating environmental interference. As a result, the use of multiple antennas is usually recommended for use in urban and outdoor environments where there is not a clear line of sight between transmitter and receiver.