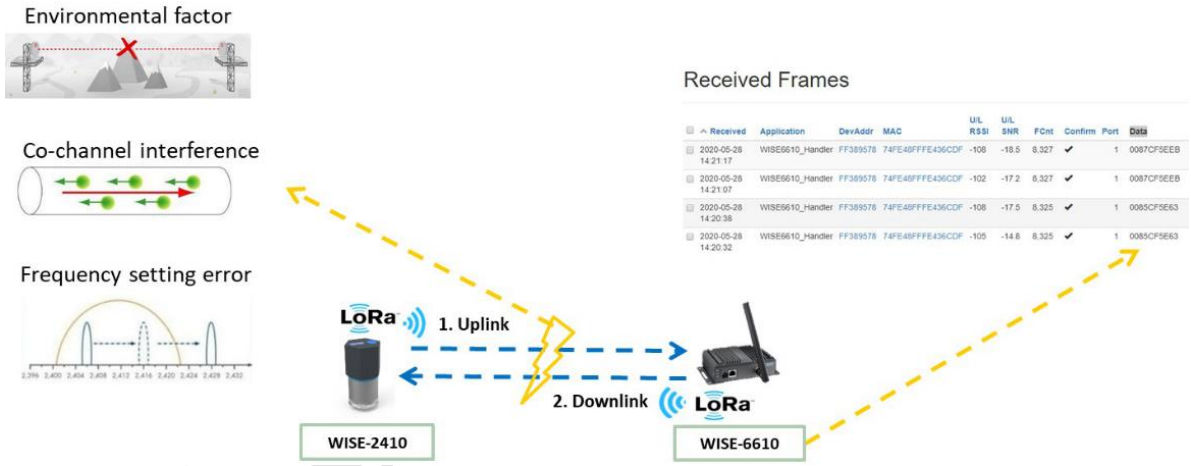
ADVANTECH Enabling an Intelligent Planet

Advantech AE Technical Share Document

Date	2020/5/25	SR#	1-4189033089
Category	■FAQ □SOP	Related OS	N/A
Abstract	Troubleshooting steps for the connection between WISE 2410 and WISE 6610 and how to improve signal reception.		
Keyword	LoRaWAN, Gateway, Signal delicate		
Related Product	WISE-6610, WISE-2410		

■ **Problem Description:**

When installing WISE-2410 and WISE-6610, there are obstacles blocking the inevitable environment, because the shielded environment may delicate a signal and cause to drop the packet. Or a user is able to connect a node and a gateway, but have some doubt for the signal strength.



Topology

■ **Answer:**

Please following the steps.

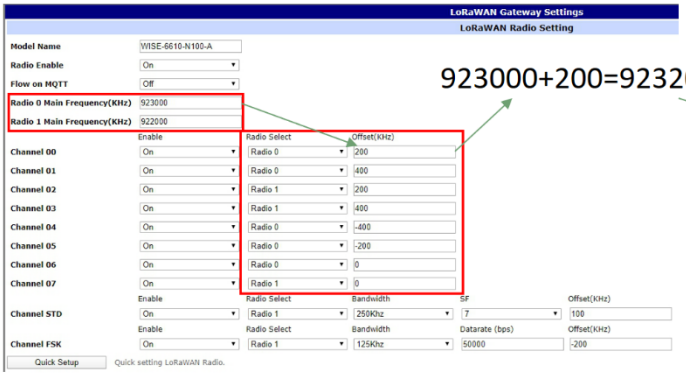
1、LoRaWAN Radio Frequency(RF) Setting.
2、ADR (Adaptive Data Rate) Setting.
3、Site Survey of WISE-2410.
4、Change Frequency Band Setting.
5、Adjust the Antenna Angle.
6、Replace the Antenna.

1、LoRaWAN Radio Frequency(RF) Setting Step:

Check LoRaWAN radio frequency setting on both modules. The channels must follow the frequency (KHz) of WISE-6610, and mapping the LoRaWAN radio frequency setting in WISE-2410.

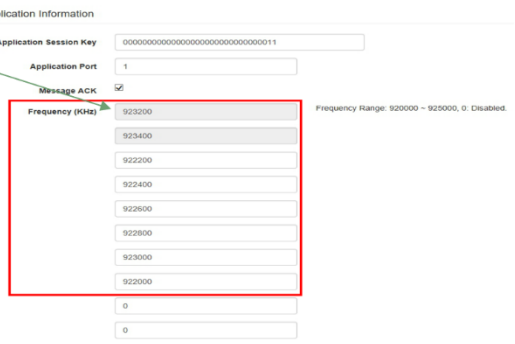
For example, if the radio 0 of WISE-6610 is set as 923M Hz. The offset of channel 0 is 200k Hz. The main frequency plus offset equals to 923.2M Hz. This value is matching with the channel 0 on WISE-2410. Other 7 channels need to follow the same rule.

WISE-6610 radio frequency setting:



923000+200=923200

WISE-2410 radio frequency setting:



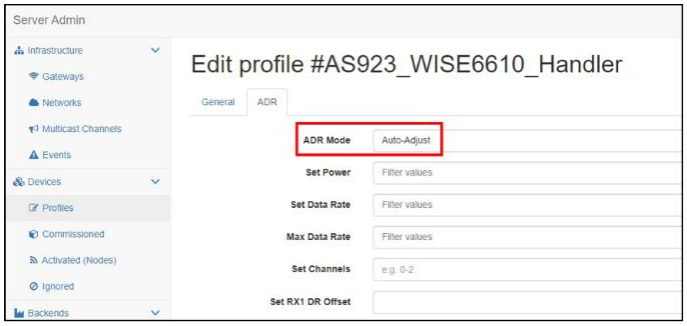
2、ADR (Adaptive Data Rate) Setting Step:

ADR is a mechanism for optimizing data rates, airtime, and energy consumption in the network.

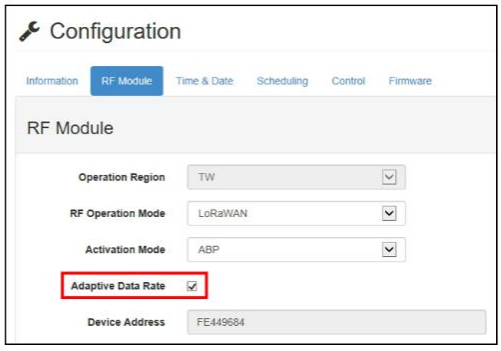
Step 1. WISE-6610 configuration: Device →Profiles →ADR →ADR Mode →"Auto-Adjust".

Step 2. WISE-2410 configuration: Configuration →RF Module →"Adaptive Data Rate ".

WISE-6610 ADR setting:



WISE-2410 ADR setting:



Step 3.

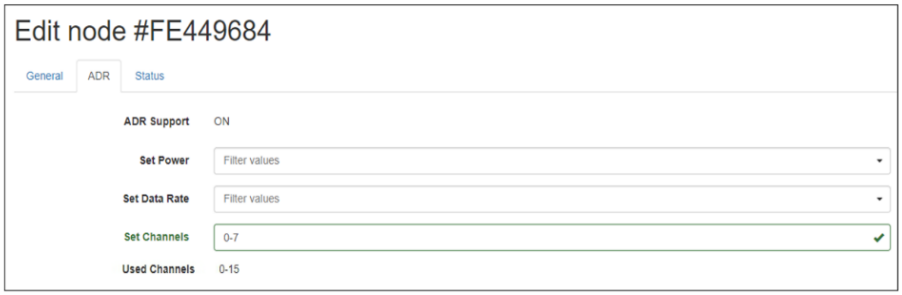
ADR support: ON (Refer to WISE-2410)

Set power: Keep it blank. Which stands for auto-negotiation.

Set data rate: Keep it blank. Which stands for auto-negotiation.

Set channel: Refer to all frequency bands of WISE-6610

WISE-6610 ADR SETTING:



3、Site Survey of WISE-2410:

Before the fixed installation of WISE-2410, use the Advantech WISE Studio site survey function to confirm whether the signal is good. Please enable “retry".

Step 1. Go to the site survey function page of WISE-2410

Step 2. Enable retry function.

Step 3. Set the total amount of the packets (The default is 100 packages) to send.

Step 4. Click on start.

Step 5. Check the LED on WISE-2410.

The LED will blink once when the WISE received an “ack” package from WISE-6610. There will be 2 items showing on the result page, packet error rate and fail status.

Figure captured from WISE-2410

- ✓ Packet Error Rate: The packet error rate will be affected by the transmission channel noise, interference, distortion, attenuation, wireless multipath fading, etc.
- ✓ Fail Status: The receiving sends packet back a corresponding confirmation message (ACK) to the successfully received packet.

4、Change Frequency Band Setting Step:

When there are multiple nodes in the same frequency band, the received signal may be dropped. The user could try to adjust other channels.

There is a “quick setup” bottom and select the frequency band according to your country.

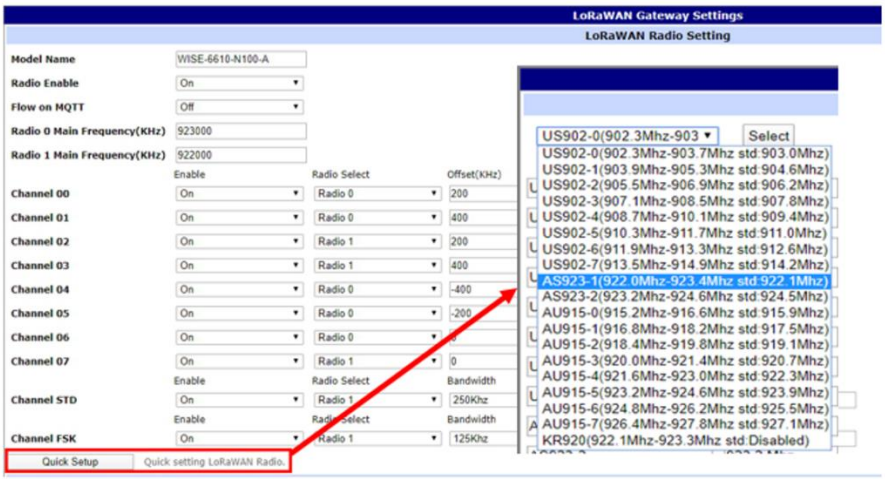


Figure captured from WISE-6610

5、Antenna Angle:

The WISE-6610 antenna and WISE-2410 should be placed in parallel as much as possible. If the relationship is vertical, please move the antenna to the best angle. The WISE-6610 antenna and WISE-2410 should be placed in parallel as much as possible. For example, if the gateway and the node are on the same plant. Set the antenna angle of WISE-6610 as the illustration on the left. Or if the relationship of modules are vertical, like the illustration on the right side, please adjust the antenna to the best angle. Let the WISE-2410 in the best coverage antenna angle of WISE-6610.

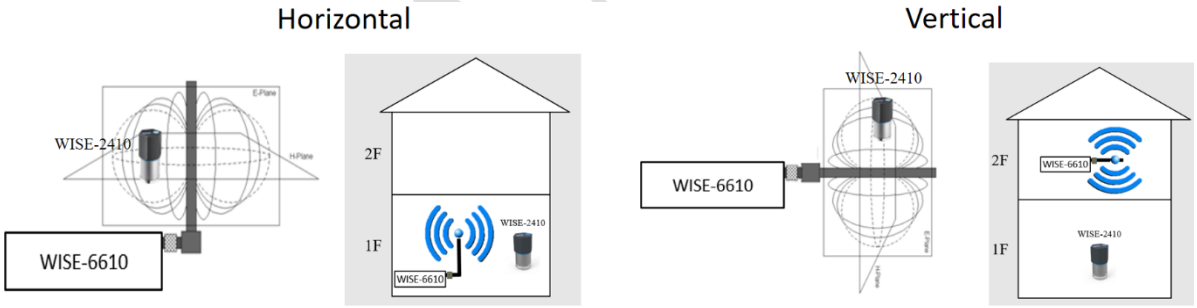


Figure captured from Wikipedia

6、Replace the Antenna:

A user can use a stronger antenna gain of the antenna to replace the original antenna. There are lots of types of the antenna from different manufacturers. Suggest to select an omnidirectional antenna.