Troubleshooting for LoRaWAN communication

This is the troubleshooting for the LoRaWAN sensors with FW versions listed below:

No.	Phenomena	Reason	Solutions
1	The BLUE LED does not blink when the battery is installed	Insert the batteries in the wrong direction	Insert the battery in the correct way
2	The RED LED is always on	Due to noise, the peripheral components (i2c, spi, uart, ..) of RF module cannot be initialized	After the 30s the node will automatically reset. If the noise causes the Watchdog not to initialize, remove the battery and wait for more than 10 seconds, then insert the battery again
3	The RED LED blinks continuously (10ms ON / 2s OFF) and the Node does not send RF. After more than 10 sending cycles, the Node will automatically reset	· Operating frequency in that country is prohibited · Operating frequency in that country is limited to Data rate, Tx Power	· Reconfigure the allowed frequency of operation · Reconfigure Data rate = DR5 / SF07, Tx Power
4	RED LED blinks continuously (10ms ON / 2s OFF) and Node sends RF continuously 3s / time but no data. After more than 10 sending cycles, the Node will automatically reset	Node runs dummy sending mode => sent by Gateway to send Downlink packets when users clear Uplink and Downlink counter values on Network Server (build-in Gateway) when activated by ABP	Configuration enabled by OTAA
5	The RED LED flashes 10ms ON / 10s OFF and the Node does not send RF	Node activation by OTAA on the Network server has not been successful	Using Magnet-Key to force Node to send RF continuously for 3 seconds/time => when activating by OTAA successfully, the GREEN LED will blink after sending RF
6	The node sent RF successfully but the GREEN LED did not blink	LED is broken	Warranty to replace LED
7	The data packet taken from the Gateway has an incorrect value	The data package is encrypted	Get the decoded packet on the Application Server
8	The node sends RF and activates by ABP, on Gateway receives data but Application server has no data	The application server still stores the counter values of the previous Uplink and Downlink	Delete the counter values of Uplink and Downlink on the Application server
9	The node does not send RF and the RF module is hot	· Insert the battery in the opposite direction · Short circuit	Warranty or replacement
10	Node does not send RF to Gateway according to the alarm, LED does not blink	· The alarm configuration is incorrect · Running out of the number of alarms set for the day	· Check alarm configuration · Check the configuration for the maximum number of alarms per day
11	Node does not send RF to Gateway when activated by the magnetic switch, LED does not blink	The magnetic switch has malfunctioned	Read the status of the magnetic switch via Modbus (when powering or attaching the battery) to see if the magnetic switch is working.
12	Node has blinked LED GREEN when sending RF but the Gateway or Application server cannot receive	· LoRa module on the Gateway is faulty · The IP connection (4G / WiFi / ...) on the Gateway is faulty	· Check Gateway's LoRa status lights on Gateway · Check 4G / WiFi status lights on Gateway
13	The value of the sensor is 0 and sensor_type = 0xFF	Lost connection with the sensor	· Check sensor connection · Replace the module sensor
14	RSSI is weak and often loses data	· Distance between Node and Gateway is far or there are many obstructions · Connection to Antenna problem · Install metal nodes or in metal cabinets	· Configure Data rate = DR0 / SF12 · Check Antenna position · Install Node in a well-ventilated location
15	After power-up, the device keeps sending the start-up message in a pre-defined cycle.	At least one battery was draining off.	Use VOM to check the voltage of the battery. The voltage of each battery must be higher than 1.2V for normal operation.

16	On network server, device's join request package and network server's acceptance package are available, but no data package is received on the network server	Wrong configuration of LoraWAN device version/model on network server.	Configure correct version/model for LoraWAN device (LoRaWAN 1.0.3 revA - Class A) on network server

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