Theory of Operation/Technical Description – FCC ID: 2A9HG-BELLWCC915

The CSS modulated signal based on LoRA air standard is generated at SX1302 chip which is transferred through a proprietary interface to SX1250 chip which is a transceiver for LoRA US915 band. One out of two SX1250 on board will upconvert and amplify the signal upto a maximum of +22dBm. This signal is furtheramplified by another front end chip SKY66420. SKY66420 has got a Transmit receive switch along with amplifier for transmit path and LNA for receive path. The received signal is again received and downconverted to baseband by another SX1250 chip on board. SX1261 does the frequency scanning job. The data to be transmitted or data received is handledby SX1302 and the exchange happens through mPCI interface.

- RF signal flow:

RF is generated from SX1250 with the I-Q data obtained from SX1302. It passes through the matching network and filters to SKY66420. From SKY66420 it passes through matching network to a u-FL connector where antenna is coupled. From the same antenna signal is received through the u-FL connector to SKY66420 which is low noise amplified and fed to SX1250 and SX1261. The demodulated I-Q data is transferred to SX1302.

- Description of Antenna system (Baluns, Multiplexers)

The antenna can be directly coupled to the Concentrator miniPCIe-SPI board with a u-FL to SMA cable or there can be u-FL to u-FL adapter cable to carrier-card where the LoRaWAN Concentrator miniPCIe-SPI board is mounted. On the carrier-card the antenna can be directly connected to the SMA edge mount connector which is in-turn mounted to the u-FL connector. The antenna has to be an omnidirectional type with 3dBi+/-0.5dB gain so as to use with the FCC ID mentioned on the module.