Theory of operation:

Transmitter:

Rain Detector: (S1)
Indication Signal sends to MCU from Rain Detector while detected the rain from the sensor.

Freeze Sensor: (TH1)
When the ambient temperature is lower than the overridden temperature, the transmitter will send an “OFF” command to the receiver unit through the transmitter part.
When the ambient temperature is higher than the overridden temperature, the transmitter will send a “RESUME” command the receiver unit through the transmitter part.

Battery Detector: (Q13, Q14, Q15)
The low battery indication will be sent to receiver unit after detected the voltage of the battery has dropped to about 5.2V.

6V Battery:
Two batteries (CR2032) have been used to supply the power for the unit.

MCU: (U1)
MCU clocked by 32.768kHz crystal. It read the address from address selector when start to operate. It processes the signal from Rain Detector, Freeze Sensor and Battery Detector. Send command signal to transmitter part to control the receiver unit.

RF Transmitter: (Q1, SAW1)
When MCU send logic high to RF Transmitter part, 315MHz RF will be transmitted from antenna. When MCU send logic zero to RF Transmitter part, there are no action on the RF Transmitter.
Address Selector: (J1-J12)
There are 12 - bit jumper that used to avoid the crosstalk between transmitters.
Maximum of 4094 unique transmitter ID code is preset on the factory by jumper setting.
Except address “000000000000” and “111111111111” for testing purpose.

Slide Switch: (S3)
It used to select the function of the Transmitter. Three poles imply three functions, which are “Rain”, “OFF”, and “Rain/Freeze”.

Voltage Regulator:
3V voltage regulator was used to supply the power to the MCU.