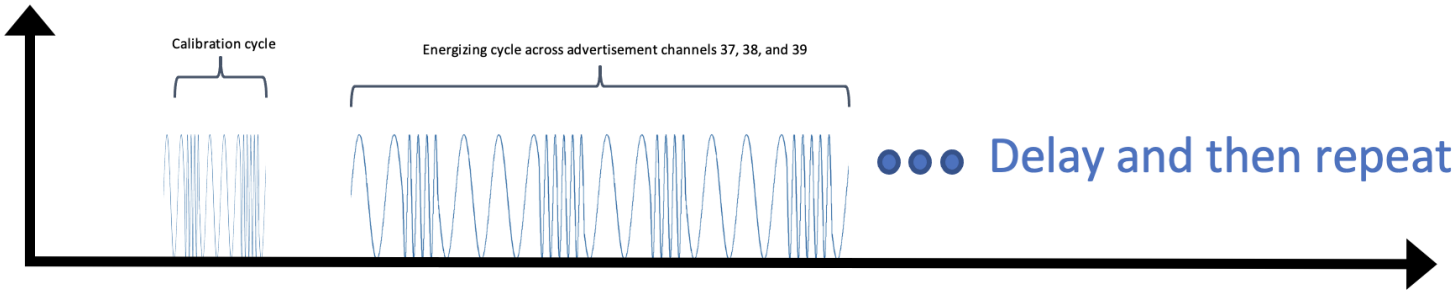
Energy Patterns

Wiliot Pixels require RF energy from bridges and/or gateways in order to harvest enough energy to send data packets over the air. The energy pattern is an important setting that can be configured to provide the best coverage for the Wiliot Pixels to efficiently harvest that energy and to make use of it.

Below is a picture showing the energizing components where the bridges and/or gateway would send a brief calibration data followed by modulated data on the Bluetooth advertisement channels 37 and/or channel 38 and/or channel 39 followed by a brief silent period of scanning where the bridges listen for Pixel responses.



In the case where a Multi Band Bridge V2 bridge is used along with Multi band Pixel tags, then the bridge can be configured to also provide RF energy at the 915 MHz frequency using the LoRa protocol.

The reason we have more than one energizing pattern is to give the flexibility to optimize for the best Wiliot Pixel experience. For example, there are energizing patterns that only perform the scanning mode without transmitting any extra RF energy to the area. There are energizing patterns that allow you to put more energy into a specific advertisement channel to possibly avoid interference with other wireless devices or to optimize performance when the pixel is applied on different materials.

Here is a list of these energizing patterns that the Wiliot bridges and gateways can support:

Terminology:

sub1GHz - Frequencies less than 1 GHz, today this is LoRa operating at 915 Mhz but this will constantly evolve over time. This is not limited to changes in the ISM frequency bands but also the modulation type of the energizing patterns themselves.

Energizing Pattern number	Beacons Description (Calibration)	Energy Description	Notes
17	beacons on channels 37, 38 and 39	No energy	
18	beacons on channels 37, 38 and 39	Channel 39	This is the default and recommended setting
24	beacons on channels 37, 38 and 39	Channel 37	
25	beacons on channels 37, 38 and 39	Channel 38	
26	beacons on channels 37, 38 and 39	Channel 2454 Mhz	
50	beacons on channels 37, 38 and 39	sub1GHz	
51	beacons on channels 37, 38 and 39	Energizing on ch39 and sub1GHz	This is the default and recommended setting for Multi Band devices
55	beacons on channels 37, 38 and 39	Energizing on ch37 and sub1GHz	
56	beacons on channels 37, 38 and 39	Energizing on ch38 and sub1GHz	
57	beacons on channels 37, 38 and 39	Energizing on 2454 Mhz and sub1GHz	