

# Experimental Protocol: LED Modulation and RF Effects on EEG

**Objective:** To investigate the neurological and physiological responses to modulated LED patterns and RF emissions using EEG and environmental sensors.

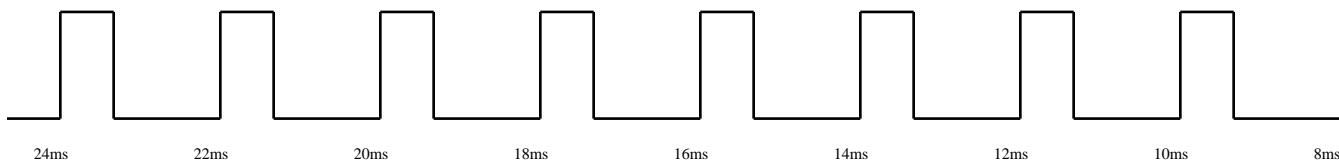
## Materials & Setup:

ESP32 microcontroller with IR/LED modulation code RFM69 433 MHz transceiver module (configured for synchronized bursts) EEG headset (Muse, OpenBCI, or NeuroSky) Environmental sensors: EMF meter, thermometer, hygrometer Dual-station layout ( $\geq 10\text{m}$  apart), synchronized by network seed

## Procedure:

Place subjects in quiet, dimly-lit room with EEG headset configured and calibrated. Begin LED modulation and RF emission with synchronized seed pattern (randomized every 5 minutes). Monitor EEG channels (F3, F4, TP9, TP10) for shifts in alpha/theta activity. Alternate modulation patterns every 10 minutes (ascending/descending/random) and record EEG variation. Record EMF, temperature, humidity data throughout the session. Repeat for both individual and mirrored dual-lab conditions to assess nonlocal influence hypotheses.

### *LED Signal Pattern (Descending Timing):*



### *EEG Overlay Diagram (conceptual):*

Overlays would illustrate alpha (8–12Hz) and theta (4–8Hz) activity relative to stimulation phases.

## Data Analysis:

EEG frequency band analysis (FFT decomposition) Comparison of alpha/theta power pre/post modulation Correlation of RF burst timing with signal artifacts or power shifts Cross-station temporal pattern analysis