



June 30, 2026

WPT Track: Practical Sub-mW Rectifier Circuit Design Competition

~ Toward the Social Implementation of Specified Low-Power Radio Stations ~

Applicants: Student and Young Engineer

Preliminary review: No

1. Outline

The purpose of this competition is to evaluate the design capabilities of RF-DC rectifier circuits.

Participants will compete to realize rectifier circuits that operate with high efficiency and stability within a specified input power range.

Participation Rules

There is no age restriction for participants, and each team shall consist of 1 to 3 members.

The same individual is not permitted to belong to multiple teams.

Student participants will be classified in the Student Division, while other WPT enthusiasts will be classified in the Young Division (mixed teams consisting of students and non-students will be classified in the Young Division).

Prize money (1st place: 50,000-yen, 2nd place: 20,000-yen, 3rd place: 10,000-yen) is only available to participants in the Student Division.

2. Evaluation

The rectifier circuits will be evaluated based on the following conditions and criteria.

(a) Measurement Conditions

Frequency: 918.0 MHz (unmodulated wave)

Input power (P_{in}): -10, -8, -6, -4, -2, 0 dBm

(coaxial cable loss will be taken into account by the organizers)

(b) Load Conditions

Load used: IET Labs RS-200 (accuracy $\pm 1\%$)

Participants shall specify the load resistance value R_L for each input power level

(total of 6 points, duplicates allowed, maximum 1 M Ω)

Resistance values must be submitted at the start of the competition.

Changes after submission are prohibited.

(c) Measurement Method

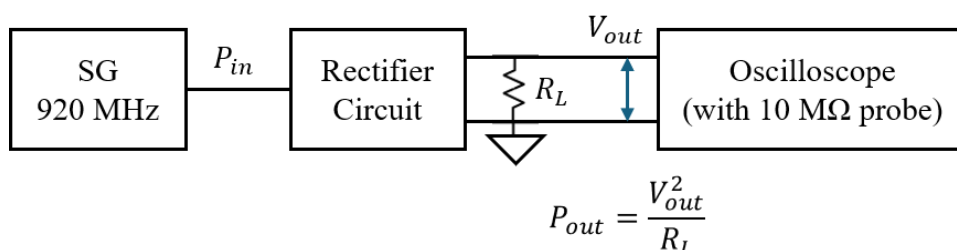
The output voltage V_{out} will be measured using an oscilloscope (probe input resistance 10 M Ω).

V_{out} shall be the time-averaged value over 5 seconds, and the efficiency $\eta = V_{out}^2/R_L/P_{in}$ will be recorded.

(d) Evaluation Criteria

The efficiency at each input power level shall be designated as η_1 through η_6 .

Rankings will be determined by the sum of 4 points from η_1 through η_6 , excluding the maximum and minimum efficiencies.



3. Requirements for Circuit

(a) Interface

RF Input: SMA connector (50Ω female)

DC Output (V_{out}): Terminal that allows connection of an oscilloscope probe (jumper wire, test pin, pin header, etc.)

(b) Circuit Configuration

There are no restrictions on circuit configuration or component selection.

*Reference: Examples of diodes include SMS7630, BAT15-04W, BAV199W, NT9000/9001/9002/9003, etc.

4. Note

- (a) Those wishing to participate in the Student Division must bring proof of student status.
- (b) The configured load resistance shall be switched with the RF input in the OFF state.
- (c) Do not touch the circuit, terminals, or cables during measurement.
- (d) Any actions that may affect the measurement results are prohibited.
- (e) These rules may be modified by the organizers as necessary.
- (f) For any other questions, please contact us at the address below.

Contact: apmc2026sdc@apmc2026.org