

Can Satellite Competition Guidelines 2016

1. Team Composition
 - a. The competition is open to high school students age 14-18 years from APRSAF country members.
 - b. Each country is allowed to send a maximum of two (2) teams for this year's competition.
 - c. Each school team is composed of maximum of three (3) students and one (1) teacher who will serve as the coach.

2. Mission Overview
 - a. Teams are tasked to perform data acquisition mission.
 - b. For the primary mission, teams should simulate a sensor payload travelling through a planetary atmosphere sampling basic atmospheric conditions specifically temperature, pressure and position.
 - c. For the secondary mission, teams may define their own mission depending on the choice of instrumentation they will use. (i.e. camera, CO² gas sensor, oxygen gas sensor, gyro sensor, force sensor, light sensor etc.)

3. CanSat Basic Hardware

The standard kit-of-parts (KOP) are composed of:

 - a. Micro-controller unit (MCU)
 - b. RF transceiver with Ground Station
 - c. Battery
 - d. Structural frame
 - e. Instrumentation (temperature and pressure sensors, GPS)
 - f. Parachute

4. Each team shall design and build their cansat models according to the standard KOP (regardless of brand and specification) and secondary mission objectives. Each team is allowed to have multiple number of cansat units. However, only one (1) cansat unit shall be used as the team's official entry in the launch competition. Teams are responsible for bringing their own replacement components including tools for repair.

5. Teams should submit an initial documentation of their cansat design, including list of components, secondary mission profile, dimensions, weight, schematics and operation flowchart.

6. Each cansat unit should not exceed 350g and all electrical components must fit inside the carrier with the exemption of the parachute, radio and GPS antennas. Antennas can be mounted externally only at the top or bottom part of the carrier. The carrier's dimension should be within the following parameters:
 - a. Volume = 330 mL
 - b. Height = 4.53 inches / 11.5 cm
 - c. Diameter = 2.61 inches / 6.6 cm
7. Launch Platform and Deployment

All cansats will be launched using an unmanned aerial vehicle (UAV) controlled by a ground pilot. A gondola is attached to the UAV as compartment for the cansat. The gondola is equipped with motors to control the deployment of the cansat. All cansats will be deployed from an altitude of one hundred (100) meters (+/- 20m) above ground.
8. Each team will only be given one (1) official launch during the competition.
9. NO transmission is allowed from the time the cansat is loaded onto the gondola and upon launch.
10. The cansat should transmit data to the ground station only upon separation and deployment (descent) from the carrier. If the cansat does not transmit, the team may use the retrieved (stored) data, if any.
11. All electronics must be hard mounted using proper mounts such as standoffs, screws or high performance adhesives.
12. Explosives, detonators, pyrotechnics, flammable substance or dangerous materials are strictly prohibited. All materials used must be safe for the ground crew, the equipment and the environment.
13. The battery must be easily accessible, in case it has to be replaced or recharged in the field.
14. The cansat must have an easily accessible master power switch for safety purposes.
15. The cansat should have a recovery system, such as a parachute, that can be reused after deployment.
16. Teams should retrieve their cansat after each launch. In the event that the cansat is not retrieved, the judges will score the team based on any data they have on hand.

17. Cansats will undergo a preliminary inspection checked by the board of judges and the launch director one (1) day before the launch competition to ensure that the unit is fully compliant with the competition specifications. Any cansat that was found non-compliant will be allowed to modify the cansat until the final inspection check. Any cansat that fails the final inspection check will be automatically disqualified.
18. The criteria for judging is as follows:

CRITERIA	%
Mission Complexity	20
Systems Performance	45
Launch Performance	15
Data Analysis	20
TOTAL	100

19. The team with the highest score will be considered as the winner of the CanSat Competition. In case of a tie, the team with the higher mission complexity score is declared the winner.
20. The competition will be judged by a panel composed of three (3) judges. The decision of the panel will be considered as final.
21. Teams should submit a final report that will be part of the basis for judging the success of the mission.
22. Contents of report:
- a. Introduction
 - b. Mission Objectives
 - c. Methodology
 - d. Results and discussion
 - e. Conclusion