

**Aprize Satellite Inc.**  
**Item 7 and 8: Purpose of Experiment and Duration**

This modification of the FCC authorization granted to Aprize Satellite Inc. (Call Sign: WD2XFT) on July 1, 2017 (File Number: 0234-EX-CR-2017), is for the purpose of adding two experimental low-Earth orbit satellites, AprizeSat-11 and AprizeSat-12, to its license.

**1. Construction and Launch.** SpaceQuest, Ltd. of Fairfax, VA is the manufacturer of the AprizeSat satellites. The satellites are based on COTS technology that allows for small, lightweight and low-cost spacecraft. Spaceflight Industries of Seattle, Washington is the launch provider. AprizeSat-11 and AprizeSat-12 are scheduled to be launched on a SpaceX Falcon9 launch vehicle from Vandenberg, AFB in California during the 2<sup>nd</sup> Quarter of 2019.

**2. Orbital Requirements.** The satellites are designed to operate in circular sun-synchronous orbits.

<b>AprizeSat-11 and AprizeSat-12</b>	
Orbital Type:	NGSO
Apogee:	575 km
Perigee:	575 km
Inclination:	97.52°
Period:	5766 seconds
Eccentricity:	0.000

**3. Purpose of Experiment.** The missions for both AprizeSat-11 and AprizeSat 12 are purely experimental and can only be performed using a space platform.

(i) **AprizeSat-11** will test an experimental payload for Myriota Pty Ltd., a company based in Adelaide, South Australia. The Myriota payload is designed to provide multiuser communications with high spectral efficiency to enable the development of a Global Sensor Network (GSN) for remote sensor data gathering and communication using small low-power user terminals. A proprietary protocol developed by Myriota uses a reprogrammable Software-Defined Radio (SDR) capable of processing complex signal waveforms on orbit. The experimental payload incorporates novel techniques for efficient two-way data communications with large numbers of remotely located sensors and devices. This proprietary communications protocol includes new architectures and waveforms, which can provide a cost effective, scalable and flexible system that can support a very large number of users that are simultaneously in the field of view of LEO satellites, while maximizing the use of precious satellite frequency spectrum. The successful operation and qualification of the Myriota payload will provide a path forward for Myriota to develop and deploy a small constellation of satellites to provide satellite M2M services for various tracking and monitoring applications.

(ii) **AprizeSat-12**, to be launched with AprizeSat-11, will test and space-qualify an experimental spectrum survey payload developed by Aurora Insight, a US company. The Aurora payload is an experiment to demonstrate and validate the ability of its flight computer firmware to monitor, process and decode signals it receives in the 1,000 to 6,000 MHz band using a novel wideband antenna developed by SpaceQuest. The Aprize UHF frequency assignment will be used for satellite telemetry, command and control, while the S-Band assignment will be used to download selected spectrum data from the Aurora payload. As with AprizeSat-11, the mission of AprizeSat-12 is exclusively experimental.

4. **Estimated Experiment Duration**. The experimental missions of AprizeSat 11 and 12 are expected to last 2 years post-launch. Due to the long lead times required for spacecraft construction and the current launch schedule, the earliest date that Aprize can begin its experimental program on AprizeSat 11 and 12 is in 2018 as these satellites scheduled to be launched in the second quarter of 2018, subject to launch delays. Therefore, pursuant to Part 5 of the Commission's Rules (§ 5.71 License period), Aprize respectfully requests approval for a 5 year license for its experimental program.

In summary, Aprize respectfully requests the Commission to grant its application for launch and experimental operation authority as detailed herein.

A debris mitigation analysis for AprizeSat-11 and AprizeSat-12 are included with this request.