



F I R E F L Y
A E R O S P A C E

DREAM Payload Submission Criteria

The quest for space travel inspires STEM interest like no other endeavor. Firefly has promoted that interest by opening its doors to youth through Firefly Academy, the Base11 Challenge, and the Firefly International Rocket Event (FIRE). Firefly is taking their STEM commitment literally to the next level, by announcing a global competition to host academic and educational payloads, free of charge, on the inaugural flight of the Firefly Alpha launch vehicle.

Firefly Aerospace will be taking proposals on potential payloads for our December 2019 launch. We are breaking payloads into 2 categories; Nontechnical and Technical. Nontechnical payloads would be things like your child's artwork or an heirloom. Technical would be satellites or tech demonstration missions. Please follow the submission instructions below:

1.1 NONTECHNICAL SUBMISSIONS

Please submit the following information to Firefly at dream@firefly.com if you are a nontechnical payload submission:

PAYLOAD INFORMATION

Payload Name/Acronym

Payload Description

Reason to Include on Launch

Payload Weight

Payload Height

Payload Width

Contact Name

Contact Email

Contact Phone

If you have any questions, please submit them to dream@firefly.com

DREAM payload submissions due by June 30th, 2019.

1.2 TECHNICAL SUBMISSIONS

TECHNICAL GUIDELINES

Non-negotiable:

- Payload (PL) shall not drive launch date, time, and orbit (Current baseline is a late afternoon launch to 300km circular to (~97deg inclination)
 - PL Mounting needs to be either a qualified aerospace dispenser/mechanism that uses a standard separation signal and can support loopback for separation verification or a fixed base/non separating interface that stays with stage 2 during the mission
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- The PL cannot transmit during nominal flight, and can only transmit at end of mission for Alpha, which is Post CCAM
- The PL cannot contain hazardous propellants or liquids
- The PL cannot contain any high-pressure systems rated under a 4 to 1 S.F to burst and not already qualified for flight. Preferred is no pressurized systems at all
- The PL must be at ~80% completion or better at award with an expected completion of September 2019 and ready to ship to the launch site at L-2 months (Firefly will notify PL of likely launch slips to delay PL shipment if possible)
- The PL provider must provide a mass simulator by August 2019 with compatible mass properties (CG and total mass within +/-5% of predicted) and compatible bolted interface
- Batteries system must be from a reputable vendor of a space qualified system
- The PL shall not contain any pyrotechnic devices, lasers, or nuclear sources
- The PL shall not require access post payload fairing encapsulation
- PL cannot require any electrical interfaces beyond 2 separation loops for them to sense separation, 2 separation loops for the LV to sense separation, and a redundant separation signal of 3-5 amps for 150-500 ms.
- The packaged PL cannot be sensitive to uncontrolled storage outside 50-80 deg C and general warehouse air quality environments which it could see during pre-launch integration storage.
- PLs must be selected by end of June, and you must submit info on the following as part of their proposal that we would baseline with the range:
 - Details on your power system
 - Details on your dispenser
 - Details on your RF systems and inhibits
 - SC qualification plan and status
 - SC acceptance plan and status
 - Summary of any hazardous systems on board
- PL provider shall be responsible for all range safety inputs and approvals
- PL provider is responsible for all FCC and other relevant licensing
- PL must be between or equal to 3U to 27U for mass properties and LV analysis purposes.
- The inclusion of the PL cannot invalidate Firefly's launch, FAA, and FCC license applications

Negotiable:

- PL must be powered off until receipt of deployment signal, with the exception that if the payload is to be used to collect launch vehicle environments. But the PL shall not transmit until commanded by the LV per requirement above.
- Preferred that the PL does not require an umbilical connection, and can sit un-powered for up to 3 months without trickle charge
- PL deployable or separating devices are discouraged (beyond the PL itself) – examples include Gravity gradient booms, solar arrays, antennas and radiators.

Ideal candidates:

- One is a PL that can instantly start taking video at deployment to capture Alpha upper stage during final operations.
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- One PL that can capture additional environments during flight and transmit back post Stage 2 operations.
- A PL that demonstrates a technology that Alpha can benefit from in the future, like a drag sail.
- Educational organization who Firefly can help as a charitable donation.

Please submit the following information to Firefly at dream@firefly.com if you meet the above stated technical guidelines.

PAYLOAD INFORMATION

Confirm you have reviewed the above guidelines. Yes/No

Payload Name/Acronym

Institution/Startup Name

POC Name

POC Email

POC Phone

Payload Contractor / Sponsor

Payload Description

Primary Objectives

Describe any payload hazards (e.g. propulsion, battery systems, etc.)

Describe any payload sensitivities (e.g. contamination, security, late access, etc)

Maximum expected payload mass [kg]

Payload Height [cm]

Payload Max Diameter [cm]

Packaged Configuration Tolerance

Payload Center of Gravity [cm] X ±Y ±Z ±

PAYLOAD INTERFACE

Post-encapsulation access needed? Yes/No

Do you need a separation system? Yes/No

Describe current or preferred mechanical interface

Can the payload be stowed in any orientation? Yes/No

Describe any orientation limits

Describe desired door location with respect to the payload

PAYLOAD TRAJECTORY PARAMETERS

Desired Orbit Apogee [km]

Desired Orbit Perigee [km]

Desired Right Ascension of

Ascending Node (RAAN) [deg]

Desired Orbit Inclination [deg]

Describe any flexibility to the above orbit Parameters

ADDITIONAL

Details on your power system

Details on your dispenser

Details on your RF systems and inhibits

SC qualification plan and status

SC acceptance plan and status

Summary of any hazardous systems on board

Show verification that payload can meet basic GEVS [GSFC-STD-7000](#) qualification level

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