

UP Aerospace Inc. is requesting coordination of telemetry frequencies to be used in a sounding rocket launch between March and November of 2022.

Pre-launch system integration testing includes powering on the telemetry transmitter along with all other avionics and payload systems to verify interoperability. These tests would be performed at our Highlands Ranch, CO facility and are tentatively scheduled for early-March. The duration of telemetry transmitter tests would be an hour or less. These tests may be required to repeat up to four times per day over a two-day period during the integration testing.

The launch will take place at Spaceport America in Truth or Consequences, NM with a tentative schedule of mid-April. The vehicle is expected to reach an apogee of approximately 100 km, and will be recovered within White Sands Missile Range, NM. During the week prior to launch, the telemetry system will need to be tested while the vehicle is on the launch pad. The duration of telemetry transmitter tests would be an hour or less. These tests may be required to repeat up to twice a day. On day of launch, starting approximately 2 hours prior to the opening of the launch window, the telemetry system will be operational. Once the vehicle is launched, the flight time is approximately 15 minutes. The telemetry system is designed to power down approximately 45 minutes after launch.

As possible with any launch campaign, and even more so with the current pandemic, there is a high probability that pre-launch integration and actual launch dates will need to be adjusted. We are requesting a window of operation between March 1 and November 30, 2022. If the anticipated mid-April launch date is missed, the next opportunities would be late summer or fall. The requested window should provide enough flexibility given the uncertainties.

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Frequency Requests:

- a) **PRIMARY:** 2370.5 MHz
M (dBc) of -65dBc or better at 2368 MHz and 2373 MHz
- b) **SECONDARY:** 2382.5 MHz
M (dBc) of -65dBc or better at 2380 MHz and 2385 MHz

S-Band Transmitter

Manufacturer: Teletronics

Part Number: TTS-5549-1

Frequency: 2200.5 to 2399.6 MHz,

Carrier Stability: +/- 0.002% over -40C to +85C

Power: 10W

Harmonics and Spurious Levels: In accordance with latest IRIG specifications

Modulation: PCM/FM

Bit Rate: 1Mb/s

Emission Designator: 1M0F1D

Modulated RF Power Spectrum complies with the IRIG-106 mask
(per TTS-5549-1 documentation):

$$M \text{ (dBc)} = \text{Max} (\{K - 100 \log | f - f_c | + 90 \log (R)\}, \{-(55 + 10 \log (P))\}), | f - f_c | \geq R/m$$

M = power relative to unmodulated carrier (i.e., units of dBc) at frequency f (MHz)

f = frequency in MHz

f_c = the carrier frequency in MHz

R = the bit rate in Mb/s

P = the rated power output of the UUT, in Watts

For PCM/FM:

K = -28

m = 2

S-Band Antenna

Manufacturer: Haigh-Farr

Part Number: 13585

Description: Stripline Full Wraparound

RHCP

Gain -3.5dBi nominal +/- 3dB (ripple)

EIRP

The wraparound antenna is designed to be isotropic with best case gain of approximately 0dBi. At 10W, our EIRP would be 40 dBm.



System Integration Test Site (ground testing):

469 Mockingbird Court
Highlands Ranch, CO 80129

39° 31' 58.2" N 104° 59' 34.0" W

Launch Site:

Spaceport America
Truth or Consequences, NM

32° 56' 24.9" N 106° 54' 23.9" W