

From: Russ Herrell

To: Doug Young
Date: May 27, 2020

Subject: Request for Info - File # 0742-EX-ST-2020

Message:

1) Please specify the control links used for this unmanned aircraft and the licenses for the links used?

C-band command and control data link while within line of sight of originating/ destination airport of Gray Butte, CA (identifier 04CA). Use of C-band C2 datalink at Gray Butte granted Dec 01, 2017 and in effect until Dec 01, 2020. Grant callsign WC2XLR.

Ku-SATCOM BLOS command and control data link elsewhere. Use of Ku SATCOM C2 datalink granted 10/26/2016 and in effect until 10/26/2031. Grant callsign E160152.

2) How is the unmanned aircraft addressing the see and avoid requirement in 14 CFR 91.113?

SkyGuardian UAS will comply with see and avoid requirements as listed in 91.113 at all times of flight. When neither in class A airspace (below FL180) nor restricted military airspace, a chase plane will be used for see-and-avoid. Once safely established in class A airspace, the use of a chase plane is not required as the UAS will have IFR flight following from ATC.

3) What are the flight paths and the COA's that support these flight paths?

The Certificate of Waiver or Authorization 2019-SAC-COA-2 Rev 3, issued Nov 01, 2019 and in effect until 10/31/2020 covers all intended flight paths.

- For flight operations in the local Gray Butte area, see page 11
- For transit to and from Yuma Proving Grounds, see page 18
- For transit to and from warning area W-289 off of the southern California coast, see page 20

4) What systems nomenclatures are associated with each frequency band request?

- 1030 MHz corresponds to Honeywell's TPA-100B traffic collision and avoidance system (TCAS) hardware
- 16.402-17.3 GHz corresponds to GA-ASI's "Lynx" synthetic aperture radar (SAR)
- 8.75-8.85 MHz corresponds to GA-ASI's air-to-air radar
- 9600 MHz corresponds to Raytheon SAS's SeaVue radar, model number SV2022-ISX1
- 291.25-291.55 MHz corresponds to the Ultra Electronics sonobuoy monitoring and control system (SMCS) pod, model number 5982-7000-001
- 9380-9440 MHz corresponds to Furuno's identification radar, model 1815

5) Are there any other RF systems on the aircraft (i.e., a transponder, DME, ATC radio)?

Yes:

- ADS-B compliant transponder
- UHF/VHF radio
- Radar altimeter

6) Have any of the systems on the aircraft received FCC Grants of Equipment Authorization?

Yes:

- Air-to-air radar authorization WK2XOK granted Jan 27, 2020 and in effect until Feb 01, 2021. Grant does not cover entire area of operations associated with this request
- Lynx SAR authorization WK2XUX granted 5/14/2020 and in effect until 5/1/2022. Grant does not cover entire area of operations associated with this request

• Honeywell TPA-100B TCAS hardware authorization WK2XWG granted 4/18/2020 and in effect until 9/30/2020. Grant WK2XWG was for use in conjunction with NASA SIO contract number 80AFRC19M0005 and therefore cannot be used for any other purpose.

• SMCS pod authorization WQ9XJY granted 5/13/2020 and in effect until 10/7/2020 but does not cover the required routes of flight as described above

7) Have any of the systems on the aircraft received FAA Equipment Certification?

No. The SkyGuardian UAS itself is a prototype and GA-ASI has begun the process of obtaining a type certification from the FAA; this process is ongoing. Similarly, GA-ASI is in the process of obtaining certification for its detect and avoid system (DAAS; comprised in part of the aforementioned air-to-air radar and TCAS systems).