24 September 2009

MEMORANDUM FOR 46 RANMS

Stark Aerospace

Heron TX/RX Information

1. The Heron is an unmanned aircraft system (UAS), meaning that some of the electronics are ground based and the rest are airborne. The ground based systems consist of a Ground Data Terminal. The GDT is directly connected to the Ground Control Station (GCS) in a fixed location on the range. The data cables are 50 ft in length and made of copper. There are 3 antennas on the GDT and their information is as follows:

Nomenclature:	EL/K-1861	
Transmit Distance:	120 miles	
Antenna type:	Omni	dipole
	Directional	dish
	UHF	dipole
Tracking:	360 Deg in Azimuth	15 Deg in Elevation
Frequency Range:	C Band (set 1)	**4.40** - 4.65 GHz
	(set 2)	4.85 – **5.1** GHz
	UHF (backup)	465-510
Antenna Gain:	C Band Directional	34 dB at 4.75 GHz
	C Band Omni	2 dBi
	UHF	5.6 dB over .5 wave dipole
Bandwidth Uplink:	C Band Clear	-60 dB / 1.2 MHz
		-40 dB/ 600 KHz
		-3 dB/ 160 KHz
	UHF	-60 dB/ 5 MHz
		-40 dB/ 3 MHz
		-3 dB/ 340 KHz
Output power:	(Low pwr/Hi pwr)	2/10 Watts (typically 10W)
Antenna Safety Distance:	Omni (Lo/Hi)	2 in/8 in
	Directional	8 in/16 ft
	UHF	2 in/12 in

2. The airborne systems of the Heron UAS consist of an Omni-Directional antenna for line of site C-Band communication with the GCS. It is also equipped with a UHF antenna for back up C2. The UHF antenna only receives the secondary command channel. The antenna is located on the right vertical stabilizer and is connected by RF cable to the UHF receiver. The airborne systems are as follows:

NSN:	MCN1800120-501	
Antenna type:	Omni	dipole
	Directional	dish
	UHF	Printed
Frequency Range	C Band	4.4 – 5.1 GHz

Antenna Gain:	15 dBi	
Antenna Vertical Pattern:	35 deg	
Azimuth Beam Width:	20 deg	
Elevation Beam Width:	40 deg	
Bandwidth Downlink:	Analog	-60 dB/ 55 MHz
		-40 dB/ 36 MHz
		-3dB/ 7 MHz
	Digital 9 Mbs	-60 dB/ 38 MHz
		-40 dB/ 28 MHz
		-3 dB/ 7 MHz
Antenna Safety Distance:	Omni (Lo/Hi)	4 in/ 12 in
	Directional	4 in/ 7 ft

3. The Maritime Patrol Radar (MPR) is an optional payload that tracks airborne targets, ground moving targets, and tracks weather conditions. The Heron transmits and receives its radar information only at altitude, to and from the same airborne antenna. The images/data is processed by the aircraft and relayed to the GCS via the established C-Band link. The MPR specifications are as follows:

Nomenclature:	EL/M20200A(V)3	
Transmit Distance:	Up to200 nautical miles	
Op Altitude:	18,000 feet	
Frequency Range:	8.73 – 8.97 GHz	
Bandwidth:	240 MHz	
Pulse Duration:	0.2 – 65 µsec	
Pulse Repetition Rate:	0.5 – 40 KHz	
Side Lobe Suppression:	-4 dB Azimuth	-30 dB Elevation

4. ~~Please direct all questions to Chris Jenkins, cjenkins@starkaerospace.com~~

Chris Jenkins
2009.09.24
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~~Chris Jenkins~~

~~Payloads Manager~~