S-100 UAS
Technical Description

Submitted By
Dan Wilson
The Boeing Company
Frequency Management Services
714-896-2628

SCHEDULE
Start Date: March 25, 2013
Requested for 6 months from start date.

REASON FOR APPLICATION
The Boeing Company is requesting a Special Temporary Authorization (STA) to conduct operational checks on the UAS platform and to conduct Independent Research and Development flight testing.

PURPOSE
The purpose of this application is to test the various systems on the S-100 Unmanned Aircraft System (UAS). This request supports the primary video, primary command and control, (C2) and secondary video and command and control (C2) links.

NUMBER OF SYSTEMS
Boeing plans to operate up to 3 UAS systems.

FREQUENCIES

Request 4780, 4888, 4790, and 4810 MHz or 4 other frequencies in band to support primary video downlink. Frequencies can be tuned to 1 MHz increments starting at 4775 MHz.
Equipment: Broadcast Microwave Service BMT 67

Purpose	MHz	Emission	RF Power	RF Unit	Mode	Incr	Sep
Primary Video	4775-5000	20M0F9W	8.5 watts	ERP	Dnlink	1 MHz	20 MHz

Request 4400, 4470, 4490, and 4510 MHz or 4 frequencies in band to support primary command and control uplink. Frequencies can be tuned to 1 MHz increments starting at 4400 MHz.
Equipment: Broadcast Microwave Service BMT 65

Purpose	MHz	Emission	RF Power	RF Unit	Mode	Incr	Sep
Primary C2	4400-4625	700KF9W	538 watts	ERP	Uplink	1 MHz	20 MHz

Request 433.2125 and 433.2625 MHz or two other frequencies from below list to support secondary C2 uplink functions.
Equipment: Schiebel Elektronische Geräte GmbH (SEG) Tranceiver

Purpose	MHz	Emission	RF Power	RF Unit	Mode
Secondary C2	433.2125	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	433.2375	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	433.2625	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	433.2825	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	433.3125	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	433.3375	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	433.3625	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink

Secondary C2	433.3825	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.2125	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.2375	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.2625	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.2825	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.3125	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.3375	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.3625	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink
Secondary C2	434.3825	12K5F9W	0.76 watts	ERP	C2Uplink Telemetry Downlink

Request 1780 and 1840 MHz or two other frequencies from the below list with 20 MHz separation to support the Rover video downlink.
Equipment: L-3 VT5R6L-2A/SC/LS/R

Purpose	**MHz**	**Emission**	**RF Power**	**RF Unit**	**Mode**
Rover 4 Video	1710	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1712.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1715	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1717.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1720	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1722.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1725	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1727.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1730	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1732.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1735	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1737.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1740	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1742.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1745	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1747.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1750	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1752.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1755	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1757.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1760	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1762.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1765	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1767.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1770	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1772.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1775	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1777.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1780	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1782.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1785	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1787.5	18M0F9W	4.85 watts	ERP	Downlink

Rover 4 Video	1790	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1792.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1795	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1797.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1800	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1802.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1805	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1807.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1810	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1812.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1815	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1817.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1820	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1822.5	18M0F9W	4.85 watts	ERP	Downlink
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Rover 4 Video	1842.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1845	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1847.5	18M0F9W	4.85 watts	ERP	Downlink
Rover 4 Video	1850	18M0F9W	4.85 watts	ERP	Downlink

STOP BUZZER CONTACT INFORMATION

Sean McWilliams at 480-249-7086 or Tim Walker at 602-739-5200

MOBILE LOCATION
Restricted Area R2310
33-04-48 North Latitude
111-22-21 West Longitude
NAD83
Radius of operation 100 miles / 80 kilometers or 50 Miles
Flight level 12500 feet or 3810 meters

FIXED LOCATION FOR GROUND CHECKS
Mesa, AZ
33-28-19 North Latitude
111-43-28 West Longitude
NAD83