

UNCLASSIFIED

MILITARY COMMUNICATIONS ELECTRONICS BOARD (MCEB)				
EQUIPMENT FREQUENCY ALLOCATION GUIDANCE				
Military Department Air Force Navy Army	Equipment AeroVironment Video Link		Stage 4 - Operational	
Section 1: ENCLOSURES				
Enclosure Number 1	Description J/F 12/8252		Dated 13 September 2004	
Section 2: OPERATING CHARACTERISTICS FOR WHICH SUPPORT IS CERTIFIED				
Frequency (MHz) 1755-1850	Emission 14M8F9W	Power (Mean) 1.5 W	Type of Service Aeronautical Mobile	Operating Location US&P
Section 3: MCEB GUIDANCE				
1. The enclosed application is approved for operational systems at the above locations subject to the guidance provided in the following paragraphs. 2. For the intended operation in the Aeronautical Mobile service, the subject equipment is in accordance with the ITU and US Tables of Frequency Allocation. 3. Based on the information provided, a. The transmitter does not comply with NTIA Manual, Sections 5.2.1, requirements for frequency tolerance. b. The transmitter complies with NTIA Manual, Sections 5.2.2, requirements for unwanted emission bandwidth, spurious emission and harmonic levels. c. The transmitter does comply with MIL-STD-461E requirements for spurious emissions and harmonic levels. 4. In any instance of harmful interference caused by nonconformance with NTIA Manual, Section 5.2.1, the responsibility for eliminating the harmful interference shall rest with the agency operating in nonconformance.				
Steering Member ESG Working Group MCEB Frequency Panel	Signature <i>Ronald E. Williams</i>	Date MAY 04 2005	IRAC/SPS Number Doc. 34197/1 SPS-14822/2	Page 1 of 2
Downgrading Instructions Classified by: NA Declassify on: NA		Distribution J-12 Holders		MCEB J-12 Number 8252/1

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EQUIPMENT FREQUENCY GUIDANCE

MCEB GUIDANCE	Equipment
CONTINUATION PAGE	AeroVironment Video Link

Section 3: MCEB GUIDANCE (continued)

5. Frequency assignment requests must be submitted using Standard Frequency Action Format (SFAF) and coordinated with the cognizant Area Frequency Coordinator (AFC) in accordance with ACP 190 US SUPP-1(C), Guide to Frequency Planning, prior to activation.

6. The 1755-1850 MHz band is heavily used by other DoD and Federal Government systems. It may be possible to accommodate the use of this system in the 1755-1850 MHz band on a case-by-case, location-by-location basis; however, it will require extensive coordination and/or EMC analysis to prevent any potential mutual interference to or from the many DoD systems (e.g. Space Ground Link Subsystem (SGLS), Mobile subscriber Equipment (MSE), Tactical Control Link/Precision Guided Munitions, Air Combat Training Systems, Digital Wideband Transmission System, Point-to-Point Microwave Systems, etc.).

7. Coordination with NTIA/SPS was completed and the following US certification statements were received:

- a. The Spectrum Planning Subcommittee (SPS) has reviewed this system under the provisions of Chapter 10 of the NTIA Manual, the SPS recommends that:
- b. NTIA certify Stage 4 spectrum support for the AeroVironment Video Link as specified in Section 2.
- c. Air Force be aware that mitigating interference caused by the nonconforming frequency tolerance of 30 ppm (vs. 20 ppm as specified in Table 5.2.1 of the NTIA Manual) shall normally rest with the agency operating in nonconformance, in accordance with Section 5.1.2 of the NTIA Manual.
- d. Air Force be aware that it may be difficult or impossible to successfully coordinate assignments at some locations, due to the congested electromagnetic environment in the operating band of the subject system and the relatively wide bandwidth required for transmissions from an airborne station.

8. Authorization for use outside of the US&P is dependent on receiving a statement of supportability from the appropriate COCOM. Host nation frequency support coordination has been initiated.

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APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION UNCLASSIFIED	DATE 09-13-2004	J/F 12/08252 Page 1 of 7 Pages
DOD GENERAL INFORMATION			
TO Air Force Frequency Management Agency Engineering Division (DON) 2461 Eisenhower Ave., Suite 1203 Alexandria, VA 22331-1500		FROM Aeronautical Systems Center (AFMC) 88CG/SCXI (ASC 2004-024) Area B, Building 47, 2690 K Street Wright-Patterson AFB, OH 45433-7661	
1. APPLICATION TITLE (U) AeroVironment Video Link			
2. SYSTEM NOMENCLATURE (U) Small UAV			
3. STAGE OF ALLOCATION (U) ☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☒ d. STAGE 4 OPERATIONAL			
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) (U) 1755 MHz - 1850 MHz b. EMISSION DESIGNATORS (U) 14M8F9W			
5. TARGET STARTING DATE FOR SUBSEQUENT STAGES			
a. STAGE 2 (U) NA		b. STAGE 3 (U) NA	
		c. STAGE 4 (U) NA	
6. EXTENT OF USE (U) Intermittent			
7. GEOGRAPHICAL AREA FOR			
a. STAGE 2 (U) NA			
b. STAGE 3 (U) NA			
c. STAGE 4 (U) US&P			
8. NUMBER OF UNITS			
a. STAGE 2 (U) NA		b. STAGE 3 (U) NA	
		c. STAGE 4 (U) 1000	
9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT (U) 4			
10. OTHER J/F 12 APPLICATION ID(S) TO BE (U) ☐ a. SUPERSEDED ☒ b. RELATED J/F 12/6892 J/F 12/08057/4		11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11? (U) ☐ a. YES ☒ b. NO ☐ c. NAVAIL	
12. NAMES AND TELEPHONE NUMBERS (U)			
a. PROGRAM MANAGER Lt Joshua Seder, ASC/RAJA		(1) COMMERCIAL 937-656-3189	(2) DSN 986-3189
b. PROJECT ENGINEER Mr William Green, ASC/RAJA		(1) COMMERCIAL 937-255-5082	(2) DSN 785-5082
13. REMARKS (U)			
DOWNGRADING INSTRUCTIONS			J/F 12/08252 CLASSIFICATION UNCLASSIFIED

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TRANSMITTER EQUIPMENT CHARACTERISTICS			
1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) VNTXL-2A/SC232 Video/Telemetry Tx		2. MANUFACTURER'S NAME (U) L3 Communications	
3. TRANSMITTER INSTALLATION (U) Aircraft		4. TRANSMITTER TYPE (U) FM Video and Telemetry	
5. TUNING RANGE (U) 1710 MHz - 1850 MHz		6. METHOD OF TUNING (U) Synthesizer	
7. RF CHANNELING CAPABILITY (U) 1710 MHz, 57 channels in 2.5 MHz steps		8. EMISSION DESIGNATORS (U) 14M8F9W (U) (U)	
9. FREQUENCY TOLERANCE (U) 30 ppm		12. EMISSION BANDWIDTH ☐ CALCULATED ☒ MEASURED	
10. FILTER EMPLOYED (U) ☒ a. YES ☐ b. NO		a. -3 dB (U) 2.4 MHz (U) (U)	
11. SPREAD SPECTRUM (U) ☐ a. YES ☒ b. NO		b. -20 dB (U) 14.8 MHz (U) (U)	
13. MAXIMUM BIT RATE (U) 9600 bps		c. -40 dB (U) 26 MHz (U) (U)	
14. MODULATION TECHNIQUES AND CODING (U) NTSC video and telemetry subcarrier using FSK modulation.		d. -60 dB (U) 38 MHz (U) (U)	
16. PRE-EMPHASIS (U) ☒ a. YES ☐ b. NO		e. OC-BW (U) 14.8 MHz (U) (U)	
19. POWER		15. MAXIMUM MODULATION FREQUENCY (U) 7.6 MHz	
a. MEAN (U) 1.5 W (U) (U)		17. DEVIATION RATIO (U) 1.027	
b. PEP (U) NA (U) (U)		18. PULSE CHARACTERISTICS	
20. OUTPUT DEVICE (U) Common Source FET Transistor		a. RATE (U) NA (U) (U)	
22. SPURIOUS LEVEL (U) -80 dB		b. WIDTH (U) NA (U) (U)	
23. FCC TYPE ACCEPTANCE NO. (U) NA		c. RISE TIME (U) NA (U) (U)	
24. REMARKS (U)		d. FALL TIME (U) NA (U) (U)	
Item 10: 7 pole low pass filter between output device and antenna. The insertion loss is 3 dB in the pass band and 75 dB at the 2nd Harmonic.		e. COMP RATIO (U) NA (U) (U)	
Item 15: Highest Modulation Frequency is subcarrier at 7.6 MHz. Highest Video is 4.2 MHz.		21. HARMONIC LEVEL	
Item 16: Video Pre-Emphasis per CCIR 405, 525 Line Curve.		a. 2nd (U) -86 dB	
Item 21c. None observed.		b. 3rd (U) -89 dB	
		c. OTHER (U) (See Remarks)	
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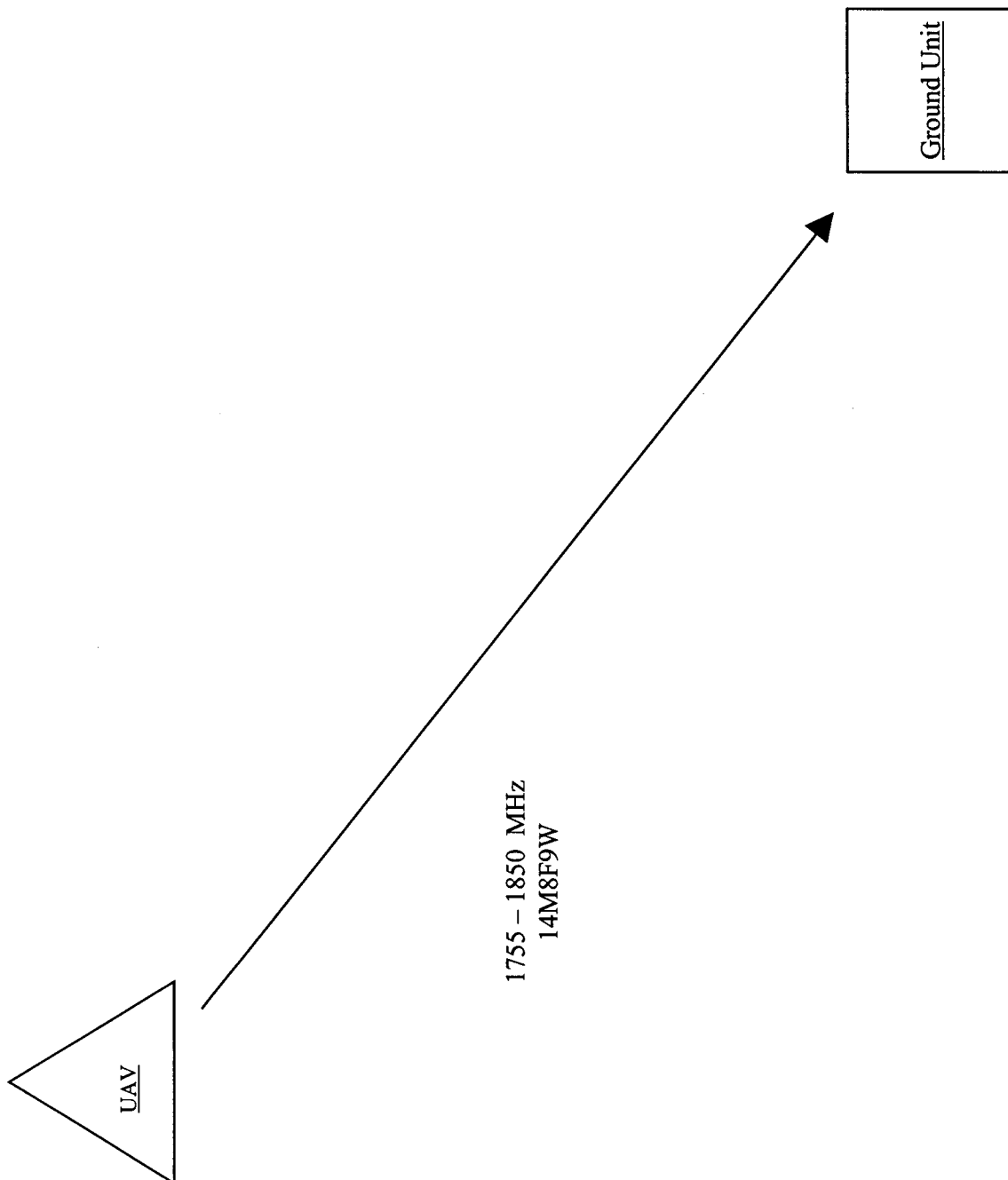
CLASSIFICATION UNCLASSIFIED				PAGE 3																	
RECEIVER EQUIPMENT CHARACTERISTICS																					
1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) VR(10/20)LA/SC232 Receiver			2. MANUFACTURER'S NAME (U) L3 Communications																		
3. RECEIVER INSTALLATION (U) Ground Station			4. RECEIVER TYPE (U) Single Conversion Superheterodyne																		
5. TUNING RANGE (U) 1710 MHz - 1850 MHz			6. METHOD OF TUNING (U) Synthesizer																		
7. RF CHANNELING CAPABILITY (U) 1710 MHz, 57 channels in 2.5 MHz steps			8. EMISSION DESIGNATORS (U) 14M8F9W																		
9. FREQUENCY TOLERANCE (U) 30 ppm			11. RF SELECTIVITY ☐ CALCULATED ☒ MEASURED																		
10. IF SELECTIVITY <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%;">1st (U)</th> <th style="width: 15%;">2nd (U)</th> <th style="width: 15%;">3rd (U)</th> </tr> </thead> <tbody> <tr> <td>a. -3 dB</td> <td>24 MHz</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>b. -20 dB</td> <td>27 MHz</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>c. -60 dB</td> <td>40 MHz</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table>				1st (U)	2nd (U)	3rd (U)	a. -3 dB	24 MHz	NA	NA	b. -20 dB	27 MHz	NA	NA	c. -60 dB	40 MHz	NA	NA	a. -3 dB (U) 200 MHz b. -20 dB (U) 250 MHz c. -60 dB (U) 350 MHz d. Preselection Type (U) 8-POLE LC band-pass		
	1st (U)	2nd (U)	3rd (U)																		
a. -3 dB	24 MHz	NA	NA																		
b. -20 dB	27 MHz	NA	NA																		
c. -60 dB	40 MHz	NA	NA																		
12. IF FREQUENCY <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tbody> <tr> <td style="width: 15%;">a. 1st (U)</td> <td>480 MHz</td> </tr> <tr> <td>b. 2nd (U)</td> <td>NA</td> </tr> <tr> <td>c. 3rd (U)</td> <td>NA</td> </tr> </tbody> </table>			a. 1st (U)	480 MHz	b. 2nd (U)	NA	c. 3rd (U)	NA	13. MAXIMUM POST DETECTION FREQUENCY (U) 7.6 MHz												
a. 1st (U)	480 MHz																				
b. 2nd (U)	NA																				
c. 3rd (U)	NA																				
15. OSCILLATOR TUNED <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%;">1st (U)</th> <th style="width: 15%;">2nd (U)</th> <th style="width: 15%;">3rd (U)</th> </tr> </thead> <tbody> <tr> <td>a. ABOVE TUNED FREQUENCY</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>b. BELOW TUNED FREQUENCY</td> <td></td> <td></td> <td></td> </tr> <tr> <td>c. EITHER ABOVE OR BELOW THE FREQUENCY</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				1st (U)	2nd (U)	3rd (U)	a. ABOVE TUNED FREQUENCY	X			b. BELOW TUNED FREQUENCY				c. EITHER ABOVE OR BELOW THE FREQUENCY				14. MINIMUM POST DETECTION FREQUENCY (U) 6 Hz		
	1st (U)	2nd (U)	3rd (U)																		
a. ABOVE TUNED FREQUENCY	X																				
b. BELOW TUNED FREQUENCY																					
c. EITHER ABOVE OR BELOW THE FREQUENCY																					
18. DE-EMPHASIS (U) ☒ a. YES ☐ b. NO			16. MAXIMUM BIT RATE (U) 9600 bps																		
19. IMAGE REJECTION (U) 60 dB			17. SENSITIVITY <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tbody> <tr> <td style="width: 15%;">a. SENSITIVITY (U)</td> <td>- 85 dBm</td> </tr> <tr> <td>b. CRITERIA (U)</td> <td>12dB S/N</td> </tr> <tr> <td>c. NOISE FIG (U)</td> <td>6 dB</td> </tr> <tr> <td>d. NOISE TEMP (U)</td> <td>NA</td> </tr> </tbody> </table>			a. SENSITIVITY (U)	- 85 dBm	b. CRITERIA (U)	12dB S/N	c. NOISE FIG (U)	6 dB	d. NOISE TEMP (U)	NA								
a. SENSITIVITY (U)	- 85 dBm																				
b. CRITERIA (U)	12dB S/N																				
c. NOISE FIG (U)	6 dB																				
d. NOISE TEMP (U)	NA																				
21. REMARKS (U) Item 18: 6 Hz to 5 MHz per CCIR 405, 525 lines.			20. SPURIOUS REJECTION (U) 60 dB																		
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ANTENNA EQUIPMENT CHARACTERISTICS			
1. (U) ☒ a. TRANSMITTING ☐ b. RECEIVING ☐ c. TRANSMITTING AND RECEIVING			
2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) AeroVironment 55018		3. MANUFACTURER'S NAME (U) AeroVironment, Inc.	
4. FREQUENCY RANGE (U) 1710 MHz - 1850 MHz		5. TYPE (U) Dipole	
6. POLARIZATION (U) Vertical		7. SCAN CHARACTERISTICS	
8. GAIN		a. TYPE (U) FIXED	
a. MAIN BEAM (U) 2.2 dBi		b. VERTICAL SCAN (U) NA	
b. 1st MAJOR SIDE LOBE (U) NA		(1) Max Elev (U) NA	
9. BEAMWIDTH		(2) Min Elev (U) NA	
a. HORIZONTAL (U) 360 deg		(3) Scan Rate (U) NA	
b. VERTICAL (U) 78 deg		c. HORIZONTAL SCAN (U) NA	
		(1) Sector Scanned (U) NA	
		(2) Scan Rate (U) NA	
		d. SECTOR BLANKING (U) ☐ (1) YES ☒ (2) NO	
10. REMARKS (U)			
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DD FORM 1494, MAY 91 S/N 0102-LF-001-4941

PICTORIAL LINE DIAGRAM

AeroVironmmnet Video Link



APPLICATION FOR SPECTRUM REVIEW	CLASSIFICATION UNCLASSIFIED	PAGE 7
NTIA GENERAL INFORMATION		
1. APPLICATION TITLE (U) AeroVironment Video Link		
2. SYSTEM NOMENCLATURE (U) Small UAV		
3. STAGE OF ALLOCATION (U) ☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☒ d. STAGE 4 OPERATIONAL		
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) (U) 1755 MHz - 1850 MHz b. EMISSION DESIGNATORS (U) 14M8F9W		
5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (U) Small Unmanned Aerial Vehical (UAV) designed to provide surveillance and reconnaissance information. (WARTIME USE) ☒ a. YES ☐ b. NO		
6. INFORMATION TRANSFER REQUIREMENTS (U) FM Video and Data with 9600 bps		
7. ESTIMATED INITIAL COST OF THE SYSTEM (U) \$139k each		
8. TARGET DATE FOR		
a. APPLICATION APPROVAL (U) 12-31-2004	b. SYSTEM ACTIVATION (U) ASAP	c. SYSTEM TERMINATION (U) 2030
9. SYSTEM RELATIONSHIP AND ESSENTIALITY (U) Small UAV with Command and Video link		
10. REPLACEMENT INFORMATION (U) None		
11. RELATED ANALYSIS AND/OR TEST DATA (U) None		
12. NUMBER OF MOBILE UNITS (U) 1000		
13. GEOGRAPHICAL AREA FOR		
a. STAGE 2 (U) NA		
b. STAGE 3 (U) NA		
c. STAGE 4 (U) US&P		
14. LINE DIAGRAM (U) See Page(s) 6	15. SPACE SYSTEMS (U) See Page(s) NA	
16. TYPE OF SERVICE(S) FOR STAGE 4 (U) Aeronautical Mobile	17. STATION CLASS(ES) FOR STAGE 4 (U) MA	
18. REMARKS (U) Item 4a: This equipment can be tuned from 1710 to 1850 MHz; however within the US&P usage will be limited to the 1755 to 1850 MHz band only.		
DOWNGRADING INSTRUCTIONS		J/F 12/08252
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