

File 31 7253 VAW

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|---|---------------------------------------|--------------------|--------------------|
| APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION | CLASSIFICATION UNCLASSIFIED | DATE 04/09/2003 | J/F 12/07253 |
| | | | Page 1 of 14 Pages |

DOD GENERAL INFORMATION

| | |
|---|--|
| TO Department of the Navy Naval Electromagnetic Spectrum Center CNO N61F Washington, DC 20350 | FROM PEO-CU 47123 Buse Road, Unit IPT Patuxent River, MD 20670-1547 |
|---|--|

1. APPLICATION TITLE (U) PREDATOR C-Band MAE UAV
 Medium Altitude Endurance Unmanned Aerial Vehicle

2. SYSTEM NOMENCLATURE (U) MAE UAV C-Band Line-of-Sight Command/Video Links

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) 5250 MHz - 5850 MHz
 b. EMISSION DESIGNATORS (U) 560KF1D 17M0F9F (See Remarks)

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) Continuous during flight operations

7. GEOGRAPHICAL AREA FOR
 a. STAGE 2 (U) NA
 b. STAGE 3 (U) NA
 c. STAGE 4 (U) US&P; Korea; Contingency Operations in Central/South America

8. NUMBER OF UNITS
 a. STAGE 2 (U) NA b. STAGE 3 (U) NA c. STAGE 4 (U) 64

9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT(U) 6

| | |
|---|---|
| 10. OTHER J/F 12 APPLICATION ID(S) TO BE (U) <input type="checkbox"/> a. SUPERSEDED <input type="checkbox"/> b. RELATED | 11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11? (U) <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO <input type="checkbox"/> c. NAVAIL |
|---|---|

12. NAMES AND TELEPHONE NUMBERS (U)

| | | |
|-----------------------------|------------------------|-----------------|
| a. PROGRAM MANAGER (b) (6) | (1) COMMERCIAL (b) (6) | (2) DSN (b) (6) |
| b. PROJECT ENGINEER (b) (6) | (1) COMMERCIAL | (2) DSN |

13. REMARKS (U) Item 4b: 4M72F1D, 88K3F1D
 Item 7c: Operation in conflict areas.

| | |
|--------------------------|---------------------------------------|
| DOWNGRADING INSTRUCTIONS | J/F 12/07253 |
| | CLASSIFICATION UNCLASSIFIED |

TRANSMITTER EQUIPMENT CHARACTERISTICS

| | |
|---|--|
| 1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) C-Band Transmitter, Model #1234211-SA-N | 2. MANUFACTURER'S NAME (U) Sierra Monolithics, Inc. |
| 3. TRANSMITTER INSTALLATION (U) Ground Data Terminal | 4. TRANSMITTER TYPE (U) Digital FM Communications |
| 5. TUNING RANGE (U) 5250 MHz - 5850 MHz | 6. METHOD OF TUNING (U) PLL Synthesizer 8. EMISSION DESIGNATORS (U) 560KF1D (U) 88K3F1D (U) |
| 7. RF CHANNELING CAPABILITY (U) 5.25 GHz, 1 MHz increments, 601 channels | 12. EMISSION BANDWIDTH <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED |
| 9. FREQUENCY TOLERANCE (U) 20 ppm | a. -3 dB (U) 340 KHz (U) 62.86 KHz (U) |
| 10. FILTER EMPLOYED (U) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO | b. -20 dB (U) 420 KHz (U) 88.32 KHz (U) |
| 11. SPREAD SPECTRUM (U) <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO | c. -40 dB (U) NA (U) 219.41 KHz (U) |
| 13. MAXIMUM BIT RATE (U) 200 Kbps | d. -60 dB (U) 1.2 MHz (U) 671.96 KHz (U) |
| 14. MODULATION TECHNIQUES AND CODING (U) 15 bit randomized NRZ FSK data | e. OC-BW (U) 560 KHz (U) 88.32 KHz (U) |
| 16. PRE-EMPHASIS (U) <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO | 15. MAXIMUM MODULATION FREQUENCY (U) 100 KHz |
| 19. POWER a. MEAN (U) 10 W (U) 10 W (U) | 17. DEVIATION RATIO (U) 1.5 |
| b. PEP (U) NA (U) NA (U) | 18. PULSE CHARACTERISTICS |
| 20. OUTPUT DEVICE (U) FET Transistor | a. RATE (U) NA (U) (U) |
| 22. SPURIOUS LEVEL (U) -65 dB | b. WIDTH (U) NA (U) (U) |
| 23. FCC TYPE ACCEPTANCE NO. (U) NA | c. RISE TIME (U) NA (U) (U) |
| | d. FALL TIME (U) NA (U) (U) |
| | e. COMP RATIO (U) NA (U) (U) |
| | 21. HARMONIC LEVEL |
| | a. 2nd (U) -65 dB |
| | b. 3rd (U) -65 dB |
| | c. OTHER (U) -65 dB |

24. REMARKS (U) Item 13: 19.2 Kbps/200 Kbps.

Item 17: 3 (19.2 Kbps)

TRANSMITTER EQUIPMENT CHARACTERISTICS

| | | | |
|--|--|--|--|
| 1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) C-Band Transmitter, Model #1234211-SA-N | | 2. MANUFACTURER'S NAME (U) Sierra Monolithics, Inc. | |
| 3. TRANSMITTER INSTALLATION (U) MAE UAV (Predator) | | 4. TRANSMITTER TYPE (U) FM Video/Data Communications | |
| 5. TUNING RANGE (U) 5250 MHz - 5850 MHz | | 6. METHOD OF TUNING (U) PLL Synthesizer | |
| 7. RF CHANNELING CAPABILITY (U) 5.25 GHz, 1 MHz increments, 601 channels | | 8. EMISSION DESIGNATORS (U) 17M0F9F (U) 4M72F1D (U) | |
| 9. FREQUENCY TOLERANCE (U) 20 ppm | | 12. EMISSION BANDWIDTH <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED | |
| 10. FILTER EMPLOYED (U) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO | | a. -3 dB (U) 8.5 MHz (U) 2.8 MHz (U) | |
| 11. SPREAD SPECTRUM (U) <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO | | b. -20 dB (U) 18.0 MHz (U) 20 MHz (U) | |
| 13. MAXIMUM BIT RATE (U) 3.2 Mbps | | c. -40 dB (U) NA (U) NA (U) | |
| 14. MODULATION TECHNIQUES AND CODING (U) (See Remarks) | | d. -60 dB (U) 46.2 MHz (U) 66 MHz (U) | |
| 16. PRE-EMPHASIS (U) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO | | e. OC-BW (U) 18.0 MHz (U) 4.7 MHz (U) | |
| 19. POWER | | 15. MAXIMUM MODULATION FREQUENCY (U) 8.0 MHz | |
| a. MEAN (U) 10 W (U) 10 W (U) | | 17. DEVIATION RATIO (U) (See Remarks) | |
| b. PEP (U) NA (U) NA (U) | | 18. PULSE CHARACTERISTICS | |
| 20. OUTPUT DEVICE (U) FET Transistor | | a. RATE (U) NA (U) NA (U) | |
| 22. SPURIOUS LEVEL (U) -65 dB | | b. WIDTH (U) NA (U) NA (U) | |
| 23. FCC TYPE ACCEPTANCE NO. (U) NA | | c. RISE TIME (U) NA (U) NA (U) | |
| | | d. FALL TIME (U) NA (U) NA (U) | |
| | | e. COMP RATIO (U) NA (U) NA (U) | |
| | | 21. HARMONIC LEVEL | |
| | | a. 2nd (U) -65 dB | |
| | | b. 3rd (U) -65 dB | |
| | | c. OTHER (U) -65 dB | |

24. REMARKS (U) Item 14: FM Video with 6.8 and 7.5 MHz Telemetry Subcarriers (17M0F9F), or FSK Data with 6.8 and 7.5 MHz carriers not utilized (4M72F1D).

Item 16: Standard NTSC pre-emphasis is employed.

Item 17: Deviation Ratio
0.8 for 17M0F9F
0.625 for 4M72F1D

RECEIVER EQUIPMENT CHARACTERISTICS

| 1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) C-Band Receiver, Model #1235110N | | | | 2. MANUFACTURER'S NAME (U) Sierra Monolithics, Inc. | | | | | | | | | | | | | | | | | | | |
|---|------------------------|---------|---------|--|---------|------------|---------|--------------------------|---------|--|------------------------|--------------------------|--------|-------------------|----|--|---------|-------|----|--|--|--|--|
| 3. RECEIVER INSTALLATION (U) MAE UAV (Predator) | | | | 4. RECEIVER TYPE (U) Dual Conversion Superheterodyne | | | | | | | | | | | | | | | | | | | |
| 5. TUNING RANGE (U) 5250 MHz - 5850 MHz | | | | 6. METHOD OF TUNING (U) PLL Synthesizer | | | | | | | | | | | | | | | | | | | |
| 7. RF CHANNELING CAPABILITY (U) 5.25 GHz, 1 MHz increments, 601 channels | | | | 8. EMISSION DESIGNATORS (U) 560KF1D 88K3F1D | | | | | | | | | | | | | | | | | | | |
| 9. FREQUENCY TOLERANCE (U) 20 ppm | | | | 11. RF SELECTIVITY <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED | | | | | | | | | | | | | | | | | | | |
| 10. IF SELECTIVITY <table border="1" style="width:100%; border-collapse: collapse;"> <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>35 MHz</td> <td>1 MHz</td> <td>NA</td> </tr> <tr> <td>b. -20 dB</td> <td>55 MHz</td> <td>3.2 MHz</td> <td>NA</td> </tr> <tr> <td>c. -60 dB</td> <td>115 MHz</td> <td>4 MHz</td> <td>NA</td> </tr> </tbody> </table> | | | | | 1st (U) | 2nd (U) | 3rd (U) | a. -3 dB | 35 MHz | 1 MHz | NA | b. -20 dB | 55 MHz | 3.2 MHz | NA | c. -60 dB | 115 MHz | 4 MHz | NA | a. -3 dB (U) 303 MHz b. -20 dB (U) 375 MHz c. -60 dB (U) 525 MHz d. Preselection Type (U) (See Remarks) | | | |
| | 1st (U) | 2nd (U) | 3rd (U) | | | | | | | | | | | | | | | | | | | | |
| a. -3 dB | 35 MHz | 1 MHz | NA | | | | | | | | | | | | | | | | | | | | |
| b. -20 dB | 55 MHz | 3.2 MHz | NA | | | | | | | | | | | | | | | | | | | | |
| c. -60 dB | 115 MHz | 4 MHz | NA | | | | | | | | | | | | | | | | | | | | |
| 12. IF FREQUENCY <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td>a. 1st (U)</td> <td>954 MHz</td> </tr> <tr> <td>b. 2nd (U)</td> <td>70 MHz</td> </tr> <tr> <td>c. 3rd (U)</td> <td>NA</td> </tr> </tbody> </table> | | | | a. 1st (U) | 954 MHz | b. 2nd (U) | 70 MHz | c. 3rd (U) | NA | 13. MAXIMUM POST DETECTION FREQUENCY (U) 150 KHz | | | | | | | | | | | | | |
| a. 1st (U) | 954 MHz | | | | | | | | | | | | | | | | | | | | | | |
| b. 2nd (U) | 70 MHz | | | | | | | | | | | | | | | | | | | | | | |
| c. 3rd (U) | NA | | | | | | | | | | | | | | | | | | | | | | |
| 15. OSCILLATOR TUNED <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;"></th> <th style="width:10%;">1st (U)</th> <th style="width:10%;">2nd (U)</th> <th style="width:10%;">3rd (U)</th> </tr> </thead> <tbody> <tr> <td>a. ABOVE TUNED FREQUENCY</td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>b. BELOW TUNED FREQUENCY</td> <td>X</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 | X | | | c. EITHER ABOVE OR BELOW THE FREQUENCY | | | | 14. MINIMUM POST DETECTION FREQUENCY (U) NA | | | |
| | 1st (U) | 2nd (U) | 3rd (U) | | | | | | | | | | | | | | | | | | | | |
| a. ABOVE TUNED FREQUENCY | | X | | | | | | | | | | | | | | | | | | | | | |
| b. BELOW TUNED FREQUENCY | X | | | | | | | | | | | | | | | | | | | | | | |
| c. EITHER ABOVE OR BELOW THE FREQUENCY | | | | | | | | | | | | | | | | | | | | | | | |
| 18. DE-EMPHASIS (U) <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO | | | | 16. MAXIMUM BIT RATE (U) 200 Kbps | | | | | | | | | | | | | | | | | | | |
| 19. IMAGE REJECTION (U) 60 dB | | | | 17. SENSITIVITY <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td>a. SENSITIVITY (U)</td> <td>-98 dBm</td> </tr> <tr> <td>b. CRITERIA (U)</td> <td>1X10⁻⁶ BER</td> </tr> <tr> <td>c. NOISE FIG (U)</td> <td>2 dB</td> </tr> <tr> <td>d. NOISE TEMP (U)</td> <td>NA</td> </tr> </tbody> </table> | | | | a. SENSITIVITY (U) | -98 dBm | b. CRITERIA (U) | 1X10 ⁻⁶ BER | c. NOISE FIG (U) | 2 dB | d. NOISE TEMP (U) | NA | | | | | | | | |
| a. SENSITIVITY (U) | -98 dBm | | | | | | | | | | | | | | | | | | | | | | |
| b. CRITERIA (U) | 1X10 ⁻⁶ BER | | | | | | | | | | | | | | | | | | | | | | |
| c. NOISE FIG (U) | 2 dB | | | | | | | | | | | | | | | | | | | | | | |
| d. NOISE TEMP (U) | NA | | | | | | | | | | | | | | | | | | | | | | |
| 21. REMARKS (U) Item 11d: 10 section cavity bandpass filter. | | | | 20. SPURIOUS REJECTION (U) 50 dB | | | | | | | | | | | | | | | | | | | |

RECEIVER EQUIPMENT CHARACTERISTICS

| 1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) C-Band Receiver, Model #1235110N | | | | 2. MANUFACTURER'S NAME (U) Sierra Monolithics, Inc. | | | | | | | | | | | | | | | | | | | |
|---|---------------|----------|---------|--|---------|------------|---------|--------------------------|---------------|--|---------------|--------------------------|--------|-------------------|----|--|---------|--------|----|--|--|--|--|
| 3. RECEIVER INSTALLATION (U) Ground Data Terminal | | | | 4. RECEIVER TYPE (U) Dual Conversion Superheterodyne | | | | | | | | | | | | | | | | | | | |
| 5. TUNING RANGE (U) 5250 MHz - 5850 MHz | | | | 6. METHOD OF TUNING (U) PLL Synthesizer | | | | | | | | | | | | | | | | | | | |
| 7. RF CHANNELING CAPABILITY (U) 5.25 GHz, 1 MHz increments, 601 channels | | | | 8. EMISSION DESIGNATORS (U) 17M0F9F 4M72F1D | | | | | | | | | | | | | | | | | | | |
| 9. FREQUENCY TOLERANCE (U) 20 ppm | | | | 11. RF SELECTIVITY <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED | | | | | | | | | | | | | | | | | | | |
| 10. IF SELECTIVITY <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;"></th> <th style="width:20%;">1st (U)</th> <th style="width:20%;">2nd (U)</th> <th style="width:20%;">3rd (U)</th> </tr> </thead> <tbody> <tr> <td>a. -3 dB</td> <td>35 MHz</td> <td>20 MHz</td> <td>NA</td> </tr> <tr> <td>b. -20 dB</td> <td>55 MHz</td> <td>22.5 MHz</td> <td>NA</td> </tr> <tr> <td>c. -60 dB</td> <td>115 MHz</td> <td>28 MHz</td> <td>NA</td> </tr> </tbody> </table> | | | | | 1st (U) | 2nd (U) | 3rd (U) | a. -3 dB | 35 MHz | 20 MHz | NA | b. -20 dB | 55 MHz | 22.5 MHz | NA | c. -60 dB | 115 MHz | 28 MHz | NA | a. -3 dB (U) 303 MHz b. -20 dB (U) 375 MHz c. -60 dB (U) 525 MHz d. Preselection Type (U) (See Remarks) | | | |
| | 1st (U) | 2nd (U) | 3rd (U) | | | | | | | | | | | | | | | | | | | | |
| a. -3 dB | 35 MHz | 20 MHz | NA | | | | | | | | | | | | | | | | | | | | |
| b. -20 dB | 55 MHz | 22.5 MHz | NA | | | | | | | | | | | | | | | | | | | | |
| c. -60 dB | 115 MHz | 28 MHz | NA | | | | | | | | | | | | | | | | | | | | |
| 12. IF FREQUENCY <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td>a. 1st (U)</td> <td>954 MHz</td> </tr> <tr> <td>b. 2nd (U)</td> <td>70 MHz</td> </tr> <tr> <td>c. 3rd (U)</td> <td>NA</td> </tr> </tbody> </table> | | | | a. 1st (U) | 954 MHz | b. 2nd (U) | 70 MHz | c. 3rd (U) | NA | 13. MAXIMUM POST DETECTION FREQUENCY (U) 8.0 MHz | | | | | | | | | | | | | |
| a. 1st (U) | 954 MHz | | | | | | | | | | | | | | | | | | | | | | |
| b. 2nd (U) | 70 MHz | | | | | | | | | | | | | | | | | | | | | | |
| c. 3rd (U) | NA | | | | | | | | | | | | | | | | | | | | | | |
| 15. OSCILLATOR TUNED <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;"></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></td> <td>X</td> <td></td> </tr> <tr> <td>b. BELOW TUNED FREQUENCY</td> <td>X</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 | X | | | c. EITHER ABOVE OR BELOW THE FREQUENCY | | | | 14. MINIMUM POST DETECTION FREQUENCY (U) NA | | | |
| | 1st (U) | 2nd (U) | 3rd (U) | | | | | | | | | | | | | | | | | | | | |
| a. ABOVE TUNED FREQUENCY | | X | | | | | | | | | | | | | | | | | | | | | |
| b. BELOW TUNED FREQUENCY | X | | | | | | | | | | | | | | | | | | | | | | |
| c. EITHER ABOVE OR BELOW THE FREQUENCY | | | | | | | | | | | | | | | | | | | | | | | |
| 18. DE-EMPHASIS (U) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO | | | | 16. MAXIMUM BIT RATE (U) 3.2 Mbps | | | | | | | | | | | | | | | | | | | |
| 19. IMAGE REJECTION (U) 60 dB | | | | 17. SENSITIVITY <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td>a. SENSITIVITY (U)</td> <td>(See Remarks)</td> </tr> <tr> <td>b. CRITERIA (U)</td> <td>(See Remarks)</td> </tr> <tr> <td>c. NOISE FIG (U)</td> <td>2 dB</td> </tr> <tr> <td>d. NOISE TEMP (U)</td> <td>NA</td> </tr> </tbody> </table> | | | | a. SENSITIVITY (U) | (See Remarks) | b. CRITERIA (U) | (See Remarks) | c. NOISE FIG (U) | 2 dB | d. NOISE TEMP (U) | NA | | | | | | | | |
| a. SENSITIVITY (U) | (See Remarks) | | | | | | | | | | | | | | | | | | | | | | |
| b. CRITERIA (U) | (See Remarks) | | | | | | | | | | | | | | | | | | | | | | |
| c. NOISE FIG (U) | 2 dB | | | | | | | | | | | | | | | | | | | | | | |
| d. NOISE TEMP (U) | NA | | | | | | | | | | | | | | | | | | | | | | |
| 21. REMARKS (U) <p>Item 11d: 10 section cavity bandpass filter.</p> <p>Item 17: -84 dBm for 23 dB S/N and 17M0F9F -86 dBm for 1X10⁻⁶ BER and 4M72F1D.</p> | | | | 20. SPURIOUS REJECTION (U) 50 dB | | | | | | | | | | | | | | | | | | | |

ANTENNA EQUIPMENT CHARACTERISTICS

1. (U) a. TRANSMITTING b. RECEIVING c. TRANSMITTING AND RECEIVING

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.

(U) GCS Acquisition Horn, Model #15921

3. MANUFACTURER'S NAME

(U) Technical Systems Associates

5. TYPE (U) Monopulse Horn

4. FREQUENCY RANGE

(U) 5250 MHz - 5850 MHz

7. SCAN CHARACTERISTICS

a. TYPE (U) MECHANICAL

6. POLARIZATION

(U) Vertical

b. VERTICAL SCAN (U) Manual

(1) Max Elev (U) 30 deg

8. GAIN

a. MAIN BEAM

(U) 15.0 dBi

(2) Min Elev (U) -10 deg

(3) Scan Rate (U) NA

b. 1st MAJOR SIDE LOBE

(U) 2.0 dBi @ 44 deg

c. HORIZONTAL SCAN (U) Mechanical

(1) Sector Scanned (U) 360

9. BEAMWIDTH

a. HORIZONTAL

(U) 30 deg

(2) Scan Rate (U) 45 deg/sec, <11 scans/minute

b. VERTICAL

(U) 30 deg

d. SECTOR BLANKING (U) (1) YES (2) NO

10. REMARKS (U)

Item 7b: The horn is normally adjusted to be 20 degrees above the horizon.

ANTENNA EQUIPMENT CHARACTERISTICS

1. (U) a. TRANSMITTING b. RECEIVING c. TRANSMITTING AND RECEIVING

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.

(U) GCS 6' Dish Antenna, Model #16616

3. MANUFACTURER'S NAME

(U) Technical Systems Associates

5. TYPE (U) (See Remarks)

4. FREQUENCY RANGE

(U) 5250 MHz - 5850 MHz

7. SCAN CHARACTERISTICS

a. TYPE (U) MECHANICAL

6. POLARIZATION

(U) Vertical

b. VERTICAL SCAN (U) Adjustable

(1) Max Elev (U) 30 deg

8. GAIN

(2) Min Elev (U) -10 deg

a. MAIN BEAM

(U) 34.5 dBi

(3) Scan Rate (U) NA

b. 1st MAJOR SIDE LOBE

(U) 14.5 dBi @ 3.5 deg

c. HORIZONTAL SCAN (U) Mechanical

(1) Sector Scanned (U) 360

9. BEAMWIDTH

a. HORIZONTAL

(U) 2.2 deg

(2) Scan Rate (U) 45 deg/sec, <11 scans/minute

b. VERTICAL

(U) 2.2 deg

d. SECTOR BLANKING (U) (1) YES (2) NO

10. REMARKS (U)

Item 5: 1.83 Meter cosecant-squared reflector with monopulse feed.

ANTENNA EQUIPMENT CHARACTERISTICS

| | | | | | |
|---|--|---------------------------------------|--|---|--|
| 1. (U) <input type="checkbox"/> a. TRANSMITTING | | <input type="checkbox"/> b. RECEIVING | | <input checked="" type="checkbox"/> c. TRANSMITTING AND RECEIVING | |
| 2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) GCS Omni Antenna, Model #10171 | | | 3. MANUFACTURER'S NAME (U) Technical Systems Associates | | |
| 4. FREQUENCY RANGE (U) 5250 MHz - 5850 MHz | | | 5. TYPE (U) Stacked Dipole Array | | |
| 6. POLARIZATION (U) Vertical | | | 7. SCAN CHARACTERISTICS | | |
| 8. GAIN | | | a. TYPE (U) FIXED | | |
| a. MAIN BEAM (U) 6 dBi | | | b. VERTICAL SCAN (U) NA | | |
| b. 1st MAJOR SIDE LOBE (U) NA | | | (1) Max Elev (U) | | |
| 9. BEAMWIDTH | | | (2) Min Elev (U) | | |
| a. HORIZONTAL (U) 360 deg | | | (3) Scan Rate (U) | | |
| b. VERTICAL (U) 30 deg | | | c. HORIZONTAL SCAN (U) NA | | |
| | | | (1) Sector Scanned (U) | | |
| | | | (2) Scan Rate (U) | | |
| | | | d. SECTOR BLANKING (U) <input type="checkbox"/> (1) YES <input checked="" type="checkbox"/> (2) NO | | |

10. REMARKS (U)

None.

ANTENNA EQUIPMENT CHARACTERISTICS

1. (U) a. TRANSMITTING b. RECEIVING c. TRANSMITTING AND RECEIVING

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.

(U) MAE UAV Omni, Model #702653-1

3. MANUFACTURER'S NAME

(U) TECOM Industries, Inc.

4. FREQUENCY RANGE

(U) 5250 MHz - 5850 MHz

5. TYPE (U) Stacked Dipole Array

7. SCAN CHARACTERISTICS

a. TYPE (U) FIXED

6. POLARIZATION

(U) Vertical

b. VERTICAL SCAN (U) NA

(1) Max Elev (U)

8. GAIN

a. MAIN BEAM

(U) 3 dBi

(2) Min Elev (U)

(3) Scan Rate (U)

b. 1st MAJOR SIDE LOBE

(U) NA

c. HORIZONTAL SCAN (U) NA

(1) Sector Scanned (U)

9. BEAMWIDTH

a. HORIZONTAL

(U) 360 deg

(2) Scan Rate (U)

b. VERTICAL

(U) 25 deg

d. SECTOR BLANKING (U) (1) YES (2) NO

10. REMARKS (U)

None.

ANTENNA EQUIPMENT CHARACTERISTICS

| | | | | | |
|---|--|---------------------------------------|--|---|--|
| 1. (U) <input type="checkbox"/> a. TRANSMITTING | | <input type="checkbox"/> b. RECEIVING | | <input checked="" type="checkbox"/> c. TRANSMITTING AND RECEIVING | |
| 2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) MAE UAV Horn Antenna, Model #11572 | | | 3. MANUFACTURER'S NAME (U) Technical Associates, Inc. | | |
| 4. FREQUENCY RANGE (U) 5250 MHz - 5850 MHz | | | 5. TYPE (U) Lensed Horn | | |
| 6. POLARIZATION (U) Vertical | | | 7. SCAN CHARACTERISTICS | | |
| 8. GAIN | | | a. TYPE (U) MECHANICAL | | |
| a. MAIN BEAM (U) 15.0 dBi | | | b. VERTICAL SCAN (U) Fixed, Adjustable | | |
| b. 1st MAJOR SIDE LOBE (U) -5 dBi @ 44 deg | | | (1) Max Elev (U) 30 deg | | |
| 9. BEAMWIDTH | | | (2) Min Elev (U) -30 deg | | |
| a. HORIZONTAL (U) 30 deg | | | (3) Scan Rate (U) NA | | |
| b. VERTICAL (U) 30 deg | | | c. HORIZONTAL SCAN (U) Mechanical | | |
| 10. REMARKS (U) | | | (1) Sector Scanned (U) 360 | | |
| None . | | | (2) Scan Rate (U) 45 deg/sec, <11 scans/minute | | |
| | | | d. SECTOR BLANKING (U) <input type="checkbox"/> (1) YES <input checked="" type="checkbox"/> (2) NO | | |

ANTENNA EQUIPMENT CHARACTERISTICS

| | |
|---|--|
| 1. (U) <input type="checkbox"/> a. TRANSMITTING <input type="checkbox"/> b. RECEIVING <input checked="" type="checkbox"/> c. TRANSMITTING AND RECEIVING | |
| 2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) MAE UAV Monopole Stub, #702-653-3 | 3. MANUFACTURER'S NAME (U) TECOM Industries, Inc. |
| 4. FREQUENCY RANGE (U) 5250 MHz - 5850 MHz | 5. TYPE (U) 1/4 Wavelength Monopole Stub |
| 6. POLARIZATION (U) Vertical | 7. SCAN CHARACTERISTICS |
| 8. GAIN | a. TYPE (U) FIXED |
| a. MAIN BEAM (U) 0.3 dBi | b. VERTICAL SCAN (U) NA |
| b. 1st MAJOR SIDE LOBE (U) NA | (1) Max Elev (U) |
| 9. BEAMWIDTH | (2) Min Elev (U) |
| a. HORIZONTAL (U) 360 deg | (3) Scan Rate (U) |
| b. VERTICAL (U) 55 deg | c. HORIZONTAL SCAN (U) NA |
| | (1) Sector Scanned (U) |
| | (2) Scan Rate (U) |
| | d. SECTOR BLANKING (U) <input type="checkbox"/> (1) YES <input checked="" type="checkbox"/> (2) NO |

10. REMARKS (U)

General: AN/URY-1/2/3/4 R-Cubed Units all have the same antenna equipment characteristics.

NTIA GENERAL INFORMATION

1. APPLICATION TITLE (U) PREDATOR C-Band MAE UAV
Medium Altitude Endurance Unmanned Aerial Vehicle

2. SYSTEM NOMENCLATURE (U) MAE UAV C-Band Line-of-Sight Command/Video Links

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) | 5250 MHz - 5850 MHz | 5250 MHz - 5850 MHz | 5250 MHz - 5850 MHz |
| b. EMISSION DESIGNATORS (U) | 560KF1D | 17M0F9F | 4M72F1D |

5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (U) Provide command and control of unmanned aerial vehicle, transmit payload imagery and system telemetry data. (WARTIME USE) a. YES b. NO

6. INFORMATION TRANSFER REQUIREMENTS(U) 19.2/200 Kbps FSK uplink; FM analog video with 19.2 kbps on subcarriers or 3.2 Mbps FSK data downlink

7. ESTIMATED INITIAL COST OF THE SYSTEM (U) \$75k per aerial vehicle system

8. TARGET DATE FOR

| | | |
|--|-------------------------------------|--------------------------------------|
| a. APPLICATION APPROVAL (U) 03/01/1998 | b. SYSTEM ACTIVATION (U) 04/01/1998 | c. SYSTEM TERMINATION (U) 12/31/2015 |
|--|-------------------------------------|--------------------------------------|

9. SYSTEM RELATIONSHIP AND ESSENTIALITY (U) This system controls the MAE UAV "PREDATOR" within Line-of-Sight, and is critical to the mission.

10. REPLACEMENT INFORMATION (U) None

11. RELATED ANALYSIS AND/OR TEST DATA (U) None

12. NUMBER OF MOBILE UNITS (U) 64

13. GEOGRAPHICAL AREA FOR

| | | |
|-------------------|-------------------|---|
| a. STAGE 2 (U) NA | b. STAGE 3 (U) NA | c. STAGE 4 (U) US&P; Korea; Contingency operations in Central/South America |
|-------------------|-------------------|---|

14. LINE DIAGRAM (U) See Page(s) 12

15. SPACE SYSTEMS (U) See Page(s) NA

16. TYPE OF SERVICE(S) FOR STAGE 4 (U) Aeronautical Mobile
Mobile

17. STATION CLASS(ES) FOR STAGE 4 (U) FAD MOEA

18. REMARKS (U) Item 4b: The transmitters and receivers are configurable via software setup for either 88K3F1D, 560KF1D, 4M72F1D, or 17M0F9F.

Item 13c: Operations in conflict areas.

| | |
|--------------------------|------------------------------------|
| DOWNGRADING INSTRUCTIONS | J/F 12/07253 |
| | CLASSIFICATION UNCLASSIFIED |

UNCLASSIFIED

MILITARY COMMUNICATIONS ELECTRONICS BOARD (MCEB)
EQUIPMENT FREQUENCY ALLOCATION GUIDANCE

Military Department: Navy, Air Force

Equipment:

PREDATOR C-Band MAE UAV Medium Altitude Endurance Unmanned Aerial
Vehicle

Stage: 4- Operational

Section 1: ENCLOSURE

1. J/F 12/07253, 09 APR 2003

Section 2: OPERATING CHARACTERISTICS FOR WHICH SUPPORT IS CERTIFIED

Frequency: 5250-5850 MHz

Emissions: (a)88K3F1D, 560KF1D; (b)4M72F1D, 17M0F9F.

Power (Mean): 10.0 WATTS

Type of Services: (a)Mobile (Aeronautical Mobile); (b)Mobile

Operating Locations: Phoenix, AZ (only ground Testing); Ft. Huachuca,
AZ; Yuma Proving Grounds, AZ; El Mirage Flight Test Facility, Adelanto,
CA; Edwards AFB, CA (including China Lake, CA); Aeronautical Systems, San
Diego, CA; Marina, CA;Camp Roberts, CA; San Clemente Island, CA; San Nicholas Island, CA; NTC
Fort Irwin, CA; NAS Key West, FL; MacDill AFB, FL; Kauai, HI; Fort Polk,
LA; Roswell, NM; Tinker AFB, OK; Fort Sill, OK; Nellis AFB, NV; Indian
Springs, NV; Nevada Test Site, NV; Fallon, NV; El Paso, TX; Langley AFB,
VA

Section 3: MCEB GUIDANCE

1. The enclosed application is approved for operational use at the above locations subject to the guidance provided in the following paragraphs.

2. For the intended use in the Aeronautical Mobile and Aeronautical Fixed service, the subject equipment is not in accordance with the US and ITU Table of Frequency Allocations over its tuning range. Operations will be on an unprotected, non-interference basis to the established services at the above locations.

3. The provisions of NTIA manual Sections 5.2 and 5.3.3 are considered applicable to the operation of the subject equipment. Based on the information provided, the subject equipment does comply with NTIA Manual Sections 5.2 requirement for frequency tolerances and unwanted emissions and, Section 5.3.3 requirement for spurious, and harmonics emission levels, unwanted emissions bandwidth and receiver's IF selectivity and spurious rejection. In any instance of harmful interference caused by nonconformance with these provisions, the responsibility for eliminating the harmful interference normally shall rest with the agency operating in nonconformance.

4. The subject equipment does not comply with the requirements of

MIL-STD-461E for harmonic levels. Compliance is not mandatory but the standard may be used as a design objective.

5. Frequency assignments request must be submitted using Standard Frequency Action Format (SFAF) and coordinated with the cognizant area frequency coordinator in accordance with ACP 190 US SUPP-1 (C), Guide to Frequency Planning, prior to activation.

6. Coordination with the NTIA Spectrum Planning Subcommittee was requested.

7. Operational use within the appropriate theater commands outside the United States has not been approved. Approval for operational use in the intended deployment area requires appropriate CINC's statement(s) that the subject system has been deemed frequency supportable.

Steering Member
ESG Working Group
MCEB Frequency Panel

APPROVAL SIGNATURE Date: 07 May 2003

IRAC DOC #: 32666/1
SPS #: 13432

Downgrading Instructions
Classified by: NA
Declassify on: NA

Distribution: J-12 Holders
MCEB J-12 Number: J/F 12/07253/1
UNCLASSIFIED