APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION **UNCLASSIFIED**	DATE 04/11/1986	J/F 12/06043
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DOD GENERAL INFORMATION

TO	FROM
USAF FREQUENCY MANAGEMENT CENTER/FME WASHINGTON, DC 20330-6341	HQ AFSC/SIOM ASD 001-86 ANDREWS AFB, MD 20334-5000

1. APPLICATION TITLE (U) SOUTHERN CALIFORNIA MICROWAVE (SCM)MODEL TTX135-6, TTX13S-10A VTX13S-10A/2SC (See Remarks)

2. SYSTEM NOMENCLATURE (U) RECEIVERS TTX13S-10A, VTX13S-10A/2SC TRANSMITTERS AND

See Data Overflow Page

3. STAGE OF ALLOCATION (U)

	a. STAGE 1 CONCEPTUAL		b. STAGE 2 EXPERIMENTAL	X	c. STAGE 3 DEVELOPMENTAL		d. STAGE 4 OPERATIONAL

4. FREQUENCY REQUIREMENTS
a. FREQUENCY(IES) (U) 2200 MHz - 2300 MHz
b. EMISSION DESIGNATORS (U) 6M00F9D

5. TARGET STARTING DATE FOR SUBSEQUENT STAGES

a. STAGE 2 (U) NA	b. STAGE 3 (U) 04/01/1986	c. STAGE 4 (U) NA

6. EXTENT OF USE (U) 3-5 HRS CONTINUOUS TRANSMITTING DURING INTERMITTENT TESTS

7. GEOGRAPHICAL AREA FOR

a. STAGE 2 (U) NA

b. STAGE 3 (U) 250 MI RADIUS: FT WORTH, TX, EDWARDS AFB, CA, (SEE REMARKS)

c. STAGE 4 (U) *

8. NUMBER OF UNITS

a. STAGE 2 (U) 4	b. STAGE 3 (U) 8	c. STAGE 4 (U) NA

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	a. SUPERSEDED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

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 ART LUSTY	(1) COMMERCIAL 817-777-1854	(2) DSN
b. PROJECT ENGINEER DON BARNETT	(1) COMMERCIAL 817-777-3915	(2) DSN

13. REMARKS (U)

Item 1: Southern California Microwave (SCM) Model TTX135-6, TTX13S-10A, VTX13S-10A/2SC Transmitters and Microdyne Model 1100-AR, SCM Model VRX23SA/2SC Receivers.

THE TTX13S-10A TRANSMITTER IS ELECTICALLY IDENTICAL TO THE TTX13S-6 TRANSMITTER.

Item 7b: ENGLIN AFB, FL AND OTHER US TEST AND TRAINING RANGES TO BE DETERMINED.

Block 7c : - add "Eglin AFB, FL, NAWCAD, Patuxent River, MD, and NAWCWD, China Lake, CA."

DOWNGRADING INSTRUCTIONS

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DD Form 1494, MAY 91   S/N 0102-LF-001-4941

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2. SYSTEM NOMENCLATURE   (U)   MICRODYNE MODEL 1100-AR, SCM MODEL VRX23SA/2SC
                                          SOUTHERN CALIFORNIA MICROWAVE MODEL TTX135-6,

4. FREQUENCY REQUIREMENTS

10. OTHER J/F 12 APPLICATION NUMBER(S) TO BE

        b. RELATED   J/F 12/

TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) SMW MODEL TTX135-6 TELEMETRY TRANSMITTER	**2. MANUFACTURER'S NAME** (U) SOUTHERN CALIFORNIA MICROWAVE
3. TRANSMITTER INSTALLATION (U) F-16 AIRCRAFT *	**4. TRANSMITTER TYPE** (U) TELEMETRY
5. TUNING RANGE (U) 2200 MHz - 2300 MHz	**6. METHOD OF TUNING** (U) Crystal Controlled

8. EMISSION DESIGNATORS
(U) 6M00F9D   (U) 6M00F9D   (U)

7. RF CHANNELING CAPABILITY (U) 100 CHS, 2200 MHz, 1 MHz STEPS	**12. EMISSION BANDWIDTH**

12. EMISSION BANDWIDTH

[X] CALCULATED   [ ] MEASURED

9. FREQUENCY TOLERANCE (U) 30 ppm	**a. -3 dB** (U) 4 MHz	(U) (U)
10. FILTER EMPLOYED (U) [X] a. YES [ ] b. NO	**b. -20 dB** (U) 6 MHz	(U) (U)
	c. -40 dB (U) NAvail	(U) (U)
11. SPREAD SPECTRUM (U) [ ] a. YES [ ] b. NO	**d. -60 dB** (U) 9 MHz	(U) (U)
	e. OC-BW (U) 6 MHz	(U) (U)
13. MAXIMUM BIT RATE (U) 512 Kbps	**15. MAXIMUM MODULATION FREQUENCY** (U) 1 MHz	
14. MODULATION TECHNIQUES AND CODING (U)	**17. DEVIATION RATIO** (U) 1.024	

18. PULSE CHARACTERISTICS

16. PRE-EMPHASIS (U) [ ] a. YES [X] b. NO	**a. RATE** (U) NA	(U) NA	(U)
19. POWER	**b. WIDTH** (U)	(U)	(U)
a. MEAN (U) 6 W (U) 10 W (U)	**c. RISE TIME** (U)	(U)	(U)
b. PEP (U) NA (U) (U)	**d. FALL TIME** (U)	(U)	(U)
	e. COMP RATIO (U)	(U)	(U)
20. OUTPUT DEVICE (U) BIPOLOAR TRANSISTOR	**21. HARMONIC LEVEL**		
22. SPURIOUS LEVEL (U) -80 dB	**a. 2nd** (U) -63 dB		
	b. 3rd (U) -63 dB		
23. FCC TYPE ACCEPTANCE NO. (U) NA	**c. OTHER** (U) -80 dB		

24. REMARKS (U)

item 3: AeroNautics (AeroLight, AeroSky & AeroStar) Unmanned Aerial
Vehicles and their respective UAV Ground Control Stations.

Item 17: AT 512kbps

Item 22: dBc

Item 21: dBc

Item 10: Filter employed: Low Pass

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TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.	2. MANUFACTURER'S NAME
(U) VTX13S-10A/2SC	(U) Southern California Microwave

3. TRANSMITTER INSTALLATION	4. TRANSMITTER TYPE
(U) Maverick UAV	(U) FM Communications

5. TUNING RANGE
(U)   2200 MHz - 2400 MHz

6. METHOD OF TUNING
(U)   Synthesizer

8. EMISSION DESIGNATORS
(U)   18M0F8W   (U)   (U)

7. RF CHANNELING CAPABILITY
(U)   2200 MHz, 1 MHz increments

12. EMISSION BANDWIDTH

		CALCULATED	X	MEASURED

9. FREQUENCY TOLERANCE
(U)   30 ppm

a. -3 dB (U) 3 MHz	(U)	(U)

10. FILTER EMPLOYED
(U)   [X] a. YES   [ ] b. NO

b. -20 dB (U) 15 MHz	(U)	(U)
c. -40 dB (U) NA	(U)	(U)

11. SPREAD SPECTRUM
(U)   [ ] a. YES   [X] b. NO

d. -60 dB (U) 41 MHz	(U)	(U)
e. OC-BW (U) 18 MHz	(U)	(U)

13. MAXIMUM BIT RATE
(U)   NA

15. MAXIMUM MODULATION FREQUENCY
(U)   (See Remarks)

14. MODULATION TECHNIQUES AND CODING
(U)   FM Analog Video with FM Subcarriers

17. DEVIATION RATIO
(U)   (See Remarks)

18. PULSE CHARACTERISTICS

a. RATE (U) NA	(U)	(U)

16. PRE-EMPHASIS
(U)   [X] a. YES   [ ] b. NO

b. WIDTH (U) NA	(U)	(U)

19. POWER

a. MEAN (U) 10 W (U) (U)		

c. RISE TIME (U) NA	(U)	(U)

b. PEP (U) NA (U) (U)		

d. FALL TIME (U) NA	(U)	(U)
e. COMP RATIO (U) NA	(U)	(U)

20. OUTPUT DEVICE	21. HARMONIC LEVEL
(U) FET, Common Source	a. 2nd (U) -65 dB
22. SPURIOUS LEVEL (U) -80 dB	b. 3rd (U) -65 dB
23. FCC TYPE ACCEPTANCE NO. (U) NA	c. OTHER (U) -80 dB

24. REMARKS   (U)

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Item 10:   5-Pole Chebychev lowpass filter between output device and
antenna connector.  Approximately 0.5 dB insertion loss with
approximately 25 dB attenuation at 2X transmitting frequency.

Items 15/17:
FM Video:  Maximum Modulation Frequency = 4.2 MHz; Deviation Ratio = 1;
Two FM subcarriers: Maximum Modulation Frequency at 6.8 MHz and 7.5 MHz;
Deviation Ratio = 0.8 for both subcarriers.

Item 16:  Video Pre-emphassis is per CCIR 405, 525 line curve.
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RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U) MDC MODEL 1100-AR RECEIVER

2. MANUFACTURER'S NAME
(U) MICRODYNE CORPORATION

3. RECEIVER INSTALLATION
(U) GENERAL DYNAMICS-FT WORTH *

4. RECEIVER TYPE
(U) DUAL CONVERSION SUPERHETERODYNE

5. TUNING RANGE
(U) 65 MHz - 4.2 GHz

6. METHOD OF TUNING
(U) Voltage Controlled Oscillator

8. EMISSION DESIGNATORS
(U) 6M00F9D

7. RF CHANNELING CAPABILITY
(U) CONTINUOUS

11. RF SELECTIVITY
[X] CALCULATED   [ ] MEASURED

9. FREQUENCY TOLERANCE
(U) 500 ppm

a. -3 dB	(U) 7.5 MHz
b. -20 dB	(U) 16 MHz
c. -60 dB	(U) 48 MHz
d. Preselection Type	(U) NONE

10. IF SELECTIVITY

10. IF SELECTIVITY	1st (U)	2nd (U)	3rd (U)
a. -3 dB	4.0 MHz	1.0 MHz	
b. -20 dB	6.0 MHz	1.5 MHz	
c. -60 dB	12.6 MHz	3.5 MHz	

13. MAXIMUM POST DETECTION FREQUENCY
(U) 1 MHz

12. IF FREQUENCY

a. 1st (U)	50 MHz
b. 2nd (U)	4.2 MHz
c. 3rd (U)	NA

14. MINIMUM POST DETECTION FREQUENCY
(U) 50 KHz

16. MAXIMUM BIT RATE
(U) 512 Kbps

15. OSCILLATOR TUNED

15. OSCILLATOR TUNED	1st (U)	2nd (U)	3rd (U)
a. ABOVE TUNED FREQUENCY	X	X	
b. BELOW TUNED FREQUENCY			
c. EITHER ABOVE OR BELOW THE FREQUENCY			

17. SENSITIVITY

a. SENSITIVITY	(U)	- 93 dBm
b. CRITERIA	(U)	10 dB S/N
c. NOISE FIG	(U)	NAvail
d. NOISE TEMP	(U)	NA

18. DE-EMPHASIS
(U)   [ ] a. YES   [X] b. NO

19. IMAGE REJECTION
(U) 75 dB

20. SPURIOUS REJECTION
(U) 60 dB

21. REMARKS (U)   item 3: AeroNautics (AeroLight, AeroSky & AeroStar) Unmanned Aerial
Vehicles and various aircraft, manned and unmanned.

Item 20: dBc

Item 19: dBc

RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U)   VRX23SA/23C

2. MANUFACTURER'S NAME
(U)   Southern California Microwave

3. RECEIVER INSTALLATION
(U)   Ground Control Station

4. RECEIVER TYPE
(U)   Dual Conversion Superheterodyne

5. TUNING RANGE
(U)   2200 MHz - 2399 MHz

6. METHOD OF TUNING
(U)   Synthesizer

8. EMISSION DESIGNATORS
(U)   18M0F8W

7. RF CHANNELING CAPABILITY
(U)   2200 MHz, 1 MHz Increments

9. FREQUENCY TOLERANCE
(U)   30 ppm

11. RF SELECTIVITY

	CALCULATED	X	MEASURED

10. IF SELECTIVITY	1st (U)	2nd (U)	3rd (U)
a. -3 dB	40 MHz	22 MHz	NA
b. -20 dB	50 MHz	24 MHz	NA
c. -60 dB	60 MHz	27 MHz	NA

RF SELECTIVITY		
a. -3 dB	(U)	700 MHz
b. -20 dB	(U)	1000 MHz
c. -60 dB	(U)	2000 MHz
d. Preselection Type	(U)	9-pole LC Bandpass

12. IF FREQUENCY

a. 1st (U)   400 MHz

b. 2nd (U)   70 MHz

c. 3rd (U)   NA

13. MAXIMUM POST DETECTION FREQUENCY
(U)   7.5 MHz

14. MINIMUM POST DETECTION FREQUENCY
(U)   NA

16. MAXIMUM BIT RATE
(U)   NA

15. OSCILLATOR TUNED	1st (U)	2nd (U)	3rd (U)
a. ABOVE TUNED FREQUENCY			
b. BELOW TUNED FREQUENCY	X	X	
c. EITHER ABOVE OR BELOW THE FREQUENCY			

17. SENSITIVITY

a. SENSITIVITY   (U)   - 100 dBm

b. CRITERIA   (U)   12 SNR

c. NOISE FIG   (U)   6 dB

d. NOISE TEMP   (U)   NA

18. DE-EMPHASIS

(U)   [X] a. YES   [ ] b. NO

19. IMAGE REJECTION
(U)   60 dB

20. SPURIOUS REJECTION
(U)   60 dB

21. REMARKS (U)   1.   Receive Video/Data from Mavrick UAV Transmitter.

ANTENNA EQUIPMENT CHARACTERISTICS

1. (U)   [X] **a. TRANSMITTING**   [ ] **b. RECEIVING**   [ ] **c. TRANSMITTING AND RECEIVING**

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.	**3. MANUFACTURER'S NAME**
(U) TECOM MODEL 102002 AIRBORNE	(U) TECOM INDUSTRIES
See Data Overflow Page	**5. TYPE** (U) SLOT

4. FREQUENCY RANGE	**7. SCAN CHARACTERISTICS**	
(U) 2200 MHz - 2290 MHz	**a. TYPE** (U) NA	
	b. VERTICAL SCAN (U)	
6. POLARIZATION	(1) Max Elev (U)	
(U) Linear	(2) Min Elev (U)	
8. GAIN	(3) Scan Rate (U)	
a. MAIN BEAM	**c. HORIZONTAL SCAN** (U)	
(U) 0 dBi		
b. 1st MAJOR SIDE LOBE	(1) Sector Scanned (U)	
(U) NA		
9. BEAMWIDTH	(2) Scan Rate (U)	
a. HORIZONTAL		
(U) 360 deg	**d. SECTOR BLANKING** (U) [ ] (1) YES [ ] (2) NO	
b. VERTICAL		
(U) 180 deg		

10. REMARKS (U)

ANTENNA DATA OVERFLOW PAGE

2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U)   INSTRUMENTATION ANTENNA

4. FREQUENCY RANGE

8. GAIN

9. BEAMWIDTH

ANTENNA EQUIPMENT CHARACTERISTICS

1. (U)   [ ] a. TRANSMITTING   [X] b. RECEIVING   [ ] c. TRANSMITTING AND RECEIVING

2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) SCI 3000-8 (AUTO-TRACK) ANTENNA	**3. MANUFACTURER'S NAME** (U) SCIENTIFIC ATLANTA, INC
	5. TYPE (U) Parabolic Reflector (8 FT)
4. FREQUENCY RANGE (U) 2200 MHz - 2300 MHz	**7. SCAN CHARACTERISTICS**
	a. TYPE (U) AUTO-TRACKING
6. POLARIZATION (U) Right/Left-Hand Circular	**b. VERTICAL SCAN** (U) MECHANICAL
	(1) Max Elev (U) 90 deg
8. GAIN	(2) Min Elev (U) -4 deg
a. MAIN BEAM (U) 27.6 dBi	(3) Scan Rate (U) 30 DEG/SEC
b. 1st MAJOR SIDE LOBE (U) 13.6 dBi @ 16 deg	**c. HORIZONTAL SCAN** (U) MECHANICAL
9. BEAMWIDTH	(1) Sector Scanned (U) 0 -360 DEGREE
a. HORIZONTAL (U) 3 deg	(2) Scan Rate (U) 30 DEG/SECOND
b. VERTICAL (U) 3 deg	**d. SECTOR BLANKING** (U) [ ] (1) YES [ ] (2) NO

10. REMARKS (U)

APPLICATION FOR SPECTRUM REVIEW	CLASSIFICATION UNCLASSIFIED	PAGE 10

NTIA GENERAL INFORMATION

1. APPLICATION TITLE (U) SOUTHERN CALIFORNIA MICROWAVE (SCM)MODEL TTX135-6, TTX13S-10A VTX13S-10A/2SC (See Remarks)

2. SYSTEM NOMENCLATURE (U) RECEIVERS TTX13S-10A, VTX13S-10A/2SC TRANSMITTERS AND

See Data Overflow Page

3. STAGE OF ALLOCATION (U)

	a. STAGE 1 CONCEPTUAL		b. STAGE 2 EXPERIMENTAL	X	c. STAGE 3 DEVELOPMENTAL		d. STAGE 4 OPERATIONAL

4. FREQUENCY REQUIREMENTS

a. FREQUENCY(IES) (U) 2200 MHz - 2300 MHz

b. EMISSION DESIGNATORS (U) 6M00F9D

5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (WARTIME USE) [ ] a. YES [ ] b. NO

(U) TO PROVIDE TELEMETRY DATA CAPABILITY FOR REAL TIME, FLIGHT TEST MONITORING BY GROUND PERSONNEL

6. INFORMATION TRANSFER REQUIREMENTS (U) PCM-FM AND FM-FM DATA TRANSFER OF FLIGHT PARAMETERS AND VOICE FROM TEST A/C TO (SEE REMARKS)

7. ESTIMATED INITIAL COST OF THE SYSTEM (U) $31,000 (6 TRANSMITTERS, 2 RECEIVERS)

8. TARGET DATE FOR

a. APPLICATION APPROVAL (U) ASAP	b. SYSTEM ACTIVATION (U) 04-00-86	c. SYSTEM TERMINATION (U) 12-00-86

9. SYSTEM RELATIONSHIP AND ESSENTIALITY (U) THIS SYSTEM, AFTER FOREIGN MILITARY SALES, WILL BE ESSENTIAL TO AIRCRAFT TESTING AND FLIGHT SAFETY. IT WILL INTERFACE WITH AIRBORNE DATA ACQUISITION SYSTEMS AND GROUND STATION PROCESSING SYSTEMS.

10. REPLACEMENT INFORMATION (U) NONE

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

12. NUMBER OF MOBILE UNITS (U) NAvail

13. GEOGRAPHICAL AREA FOR

a. STAGE 2 (U) NA

b. STAGE 3 (U) 250 MI RADIUS: FT WORTH, TX, EDWARDS AFB, CA, (SEE REMARKS)

c. STAGE 4 (U) *

14. LINE DIAGRAM (U) See Page(s) 1	15. SPACE SYSTEMS (U) See Page(s) NA
16. TYPE OF SERVICE(S) FOR STAGE 4 (U) NA	17. STATION CLASS(ES) FOR STAGE 4 (U) XT

18. REMARKS (U)

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Item 1: THE TTX13S-10A TRANSMITTER IS ELECTICALLY IDENTICAL TO THE
TTX135-6 TRANSMITTER.

Item 6: GROUND STATION.  PCM DATA RATES WILL BE BETWEEN 128 AND 512 KBPS

Item 9: THIS EQUIPMENT IS PART OF FOREIGN MILITARY SALES AND WILL NOT
ENTER THE USAF INVENTORY.
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Item 13b: EGLIN AFB, FL AND OTHER US TEST AND TRAINING RANGES TO BE DETERMINED.

Block 13C: - add "NAWCAD, Patuxent River, MD and NAWCWD, China Lake, CA."

Item 14: Contact your MILDEP representative or the JSC for a copy of the line diagram.

NTIA DATA OVERFLOW PAGE

2. SYSTEM NOMENCLATURE   (U)   MICRODYNE MODEL 1100-AR, SCM MODEL VRX23SA/2SC
SOUTHERN CALIFORNIA MICROWAVE MODEL TTX135-6,

4. FREQUENCY REQUIREMENTS

17. STATION CLASS(ES) FOR STAGE 4