APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION **UNCLASSIFIED**	DATE 2012/05/08	JF 12/ Page 1 of 5 Pages

DOD GENERAL INFORMATION

TO:	FROM:
AF Frequency Management Agency AFFMA/SCOE 2461 Eisenhower Ave., Suite 1203 Alexandria, VA 22331-1500	

1. APPLICATION TITLE
(U) FLIR Radars, R5 (LSR-5000), Perimeter Surveillance Radar

2. SYSTEM NOMENCLATURE
(U) FLIR Radars model R5 (LSR-5000), Perimeter Surveillance Radar

3. STAGE OF ALLOCATION
☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☒ d. STAGE 4 OPERATIONAL

4. FREQUENCY REQUIREMENTS
a. FREQUENCY (U) 35.25 GHz – 35.50 GHz
b. EMISSION DESIGNATOR (U) 250MF3N

5. TARGET STARTING DATE FOR SUBSEQUENT STAGES

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

6. EXTENT OF USE
(U) Continuous – up to 24hrs/day, 7 days/week

7. GEOGRAPHICAL AREA FOR
a. STAGE 2 (U) NA
b. STAGE 3 (U) NA
c. STAGE 4 (U) US&P and Worldwide

8. NUMBER OF UNITS

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

9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT
(U) up to 8

10. OTHER J/F 12 APPLICATION NUMBER TO BE	11. IS THERE ANY OPERATIONAL REQUIREMENTS AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11?
☐ a. SUPERCEDED J/F 12/ ☐ b. RELATED J/F 12/	☐ a. YES ☐ b. NO ☒ c. NAvail

12. NAMES AND TELEPHONE NUMBERS

a. PROGRAM MANAGER Pierre Poitevin (FLIR Radars)	(1) COMMERCIAL 450 663-4345	(2) DSN
b. PROJECT ENGINEER	(1) COMMERCIAL	(2) DSN

13. REMARKS

DOWNGRADING INSTRUCTIONS	CLASSIFICATION **UNCLASSIFIED**	J/F 12/

TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U) R5 (LSR-5000) Transmitter

2. MANUFACTURER'S NAME
(U) FLIR Radars

3. TRANSMITTER INSTALLATION
(U) Fixed (Transportable)

4. TRANSMITTER TYPE
(U) Frequency Modulated Continuous Wave Radar

5. TUNING RANGE
(U) 35.25 GHz (fixed)

6. METHOD OF TUNING
(U) Crystal synthesized

7. RF CHANNELING CAPABILITY
(U) None (fixed center frequency)

8. EMISSION DESIGNATOR
(U) 250MF3N

9. FREQUENCY TOLERANCE
(U) 5 ppm

10. FILTER EMPLOYED
☐ a. YES ☒ b. NO

11. SPREAD SPECTRUM
☐ a. YES ☒ b. NO

12. EMISSION BANDWIDTH
☒ CALCULATED ☐ MEASURED
a. -3 dB (U) 250.2 MHz
b. -20 dB (U) 251.0 MHz
c. -40 dB (U) 252.2 MHz
d. -60 dB (U) 255.4 MHz
e. OC-BW (U) 250 MHz

13. MAXIMUM BIT RATE
N/A

14. MODULATION TECHNIQUES AND CODING
(U) Frequency Modulated Continuous Wave (See Remarks)

15. MAXIMUM MODULATION FREQUENCY
(U) 837 Hz

16. PRE-EMPHASIS
☐ a. YES ☒ b. NO

17. DEVIATION RATIO
(U) 149375

18. PULSE CHARACTERISTICS
a. RATE (U) 667 Hz
b. WIDTH (U) 1.195 msec
c. RISE TIME (U) 20 nsec
d. FALL TIME (U) 20 nsec
e. COMP RATIO (U) NA

19. POWER
a. MEAN (U) 0.33 W
b. PEP (U) 0.4 W

20. OUTPUT DEVICE
(U) GaAS FET MMIC Amplifier

21. HARMONIC LEVEL
a. 2nd (U) <-50dBc
b. 3rd (U) (See Remarks)
c. OTHER (U) (See Remarks)

22. SPURIOUS LEVEL
(U) Less than -50dBc

23. FCC TYPE ACCEPTANCE NO.
(U) n/a

24. REMARKS
(U) 14. Linear FM. Sweeps 250 MHz in 1.195 msec at a rate of 667 Hz (sweeps/sec)
(U) 21b/c. Not measurable. Test equipment only goes up to 100 GHz.

RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U) R5 (LSR-5000) Receiver

2. MANUFACTURER'S NAME
(U) FLIR Radars

3. RECEIVER INSTALLATION
(U) Fixed (Transportable)

4. RECEIVER TYPE
(U) Homodyne FMCW Radar

5. TUNING RANGE
(U) 35.25 GHz (fixed)

6. METHOD OF TUNING
(U) Crystal synthesized

7. RF CHANNELING CAPABILITY
(U) None – fixed center frequency

8. EMISSION DESIGNATOR
(U) 250MF3N

9. FREQUENCY TOLERANCE
(U) ± 5 ppm

10. IF SELECTIVITY

	1st	2nd	3rd
a. -3 dB	(U) NA		
b. -20 dB	(U) NA		
c. -60 dB	(U) NA		

11. RF SELECTIVITY
☒ CALCULATED ☐ MEASURED

a. -3 dB (U) 550 MHz

b. -20 dB (U) 580 MHz

c. -60 dB (U) 610 MHz

d. PRESELECTION TYPE
(U) Waveguide Cutoff

12. IF FREQUENCY

a. 1st (U) NA

b. 2nd (U) NA

c. 3rd (U) NA

13. MAXIMUM POST DETECTION FREQUENCY
(U) 7 MHz

14. MINIMUM POST DETECTION FREQUENCY
(U) 5 kHz

15. OSCILLATOR TUNED

	1st	2nd	3rd
a. ABOVE TUNED FREQUENCY			
b. BELOW TUNED FREQUENCY			
c. EITHER ABOVE OR BELOW THE FREQUENCY			

16. MAXIMUM BIT RATE
(U) NA

17. SENSITIVITY

a. SENSITIVITY (U) -120 dBm

b. CRITERIA (U) 10 dB S/N

c. NOISE FIG (U) 10 dB

d. NOISE TEMP (U) NA

18. DE-EMPHASIS
☐ a. YES ☒ b. NO

19. IMAGE REJECTION
(U) NA

20. SPURIOUS REJECTION
(U) NA

21. REMARKS
(U) 13. The target modifies the return signal based on range and speed resulting in approximately 5 kHz to 7 MHz at baseband.

ANTENNA EQUIPMENT CHARACTERISTICS

1. ☐ a. TRANSMITTING ☐ b. RECEIVING ☒ c. TRANSMITTING AND RECEIVING

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U) R5 (LSR-5000) Antenna

3. MANUFACTURER'S NAME
(U) FLIR Radars

4. FREQUENCY RANGE
(U) 34.75 to 35.50 GHz

5. TYPE
(U) Parabolic reflector fed with Waveguide Horn

6. POLARIZATION
(U) Linear-Horizontal

7. SCAN CHARACTERISTICS

a. TYPE (U) Horizontal Mechanically Scanned

8. GAIN

a. MAIN BEAM
(U) 35.5 dBi

b. 1st MAJOR SIDE LOBE
(U) +12 dBi at 4 deg azimuth

b. VERTICAL SCAN

(1) MAX ELEV
(U) Fixed (See Remarks)

(2) MIN ELEV
(U) Fixed (See Remarks)

(3) SCAN RATE
(U) NA

9. BEAMWIDTH

a. HORIZONTAL

(U) 1.4 degrees

b. VERTICAL

(U) 5.0 degrees

c. HORIZONTAL SCAN

(1) SECTOR SCANNED
(U) 360 degrees

(2) SCAN RATE
(U) 55 scans per minute

d. SECTOR BLANKING
☒ (1) YES ☐ (2) NO

10. REMARKS

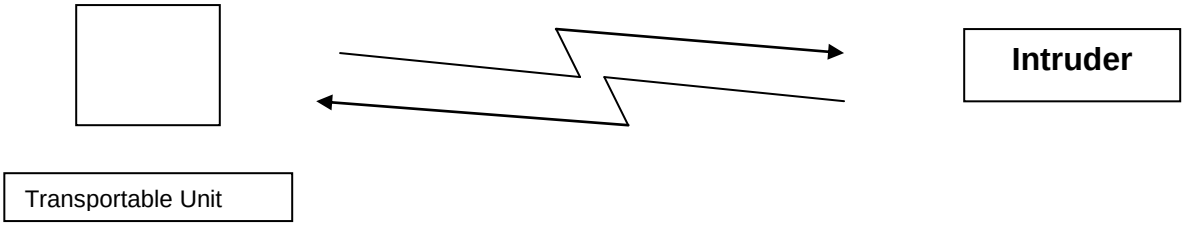
(U) 1. Two identical antennas are used, one for transmit and the second for receive. They are mechanically linked so the beam from each points in the same direction.

(U) 7b(1) / (2). Fixed with mechanically adjustable mounting (Max elevation +3 degrees, Min elevation -5 degrees).

(U) 7d. Sector blanking is selectable by the operator as to whether any blanking is on and the size and positions of the sector(s) blanked. 1 or 2 sectors of arbitrary size may be blanked.

FLIR Radars
R5 (LSR-5000), Perimeter Surveillance Radar

35.250 GHz – 35.500 GHz
250MF3N



APPLICATION FOR SPECTRUM REVIEW	CLASSIFICATION **UNCLASSIFIED**	Page

NTIA GENERAL INFORMATION

1. APPLICATION TITLE
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4. FREQUENCY REQUIREMENTS
a. FREQUENCY (U) 35.250 GHz – 35.500 GHz
b. EMISSION DESIGNATOR (U) 250MF3N

5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (WARTIME USE)

(U) Radar Intrusion detection and tracking system for use in resource protection of high value assets. ☒ a. YES ☐ b. NO

6. INFORMATION TRANSFER REQUIREMENTS
(U) None

7. ESTIMATED INITIAL COST OF THE SYSTEM
(U) $160,000 per unit

8. TARGET DATE FOR

a. APPLICATION APPROVAL	b. SYSTEM ACTIVATION	c. SYSTEM TERMINATION
(U) ASAP	(U) 06/01/2012	(U) NAvail

9. SYSTEM RELATIONSHIP AND ESSENTIALITY

(U) Will be incorporated into site sensor communication and network for use by force protection personnel.

10. REPLACEMENT INFORMATION
(U) NA

11. RELATED ANALYSIS AND/OR TEST DATA
(U) NA

12. NUMBER OF MOBILE UNITS
(U) None

13. GEOGRAPHIC AREA FOR

a. STAGE 2 (U) NA

b. STAGE 3 (U) NA

c. STAGE 4
(U) US&P and Worldwide

14. LINE DIAGRAM	15. SPACE SYSTEMS
(U) See page 5	(U) NA
16. TYPE OF SERVICE FOR STAGE 4	17. STATION CLASS FOR STAGE 4
(U) Radiolocation	(U) LR

18. REMARKS

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