

APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION UNCLASSIFIED	DATE 2013/04/07	JF 12/ Page 1 of 5 Pages
DOD GENERAL INFORMATION			
TO:		FROM:	
1. APPLICATION TITLE (U) FLIR Radars, R20SS - Ground Surveillance Radar			
2. SYSTEM NOMENCLATURE (U) FLIR Radars model R20SS - Ground 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) 9.20 GHz – 9.80 GHz b. EMISSION DESIGNATOR (U) 90M0F0N or 45M0F0N depending on mode selected			
5. TARGET STARTING DATE FOR SUBSEQUENT STAGES			
a. STAGE 2 (U) NA	b. STAGE 3 (U) NA	c. STAGE 4 (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 (U) NA	b. STAGE 3 (U) NA	c. STAGE 4 (U) 200	
9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT (U) up to 4			
10. OTHER J/F 12 APPLICATION NUMBER TO BE ☐ a. SUPERCEDED J/F 12/ ☐ b. RELATED J/F 12/		11. IS THERE ANY OPERATIONAL REQUIREMENTS AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11? ☐ a. YES ☒ b. NO ☐ c. NAvail	
12. NAMES AND TELEPHONE NUMBERS			
a. PROGRAM MANAGER Pierre Poitevin (FLIR Radars)	(1) COMMERCIAL 450 663-4554 EXT304	(2) DSN	
b. PROJECT ENGINEER	(1) COMMERCIAL	(2) DSN	
13. REMARKS			
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TRANSMITTER EQUIPMENT CHARACTERISTICS					
1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) R20SS 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) 9.225 GHz to 9.775 GHz			6. METHOD OF TUNING (U) Crystal synthesized		
7. RF CHANNELING CAPABILITY (U) under SW control (see remark)			8. EMISSION DESIGNATOR (U) 90M0F0N for channels centered at 9.25, 9.35, 9.45, 9.55, 9.65 and 9.75 GHz, 45M0F0N for channels centered at 9.225, 9.275, 9.325, 9.375, 9.425, 9.475, 9.525, 9.575, 9.625, 9.675, 9.725 GHz and 9.775 GHz		
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		
13. MAXIMUM BIT RATE N/A			a. -3 dB (U) 90.0 MHz 45.5 MHz		
			b. -20 dB (U) 92.0 MHz 46.6 MHz		
14. MODULATION TECHNIQUES AND CODING (U) Frequency Modulated Continuous Wave (See Remarks)			c. -40 dB (U) 92.7 MHz 47.1 MHz		
			d. -60 dB (U) 93.5 MHz 48.5 MHz		
			e. OC-BW (U) 91 MHz 45.5 MHz		
			15. MAXIMUM MODULATION FREQUENCY (U) 571 Hz		
			16. PRE-EMPHASIS ☐ a. YES ☒ b. NO		
			17. DEVIATION RATIO (U) 87566		
			18. PULSE CHARACTERISTICS		
19. POWER			a. RATE 513 Hz		
a. MEAN (U) 22.5 W			b. WIDTH 1752 usec		
b. PEP (U) 25 W			c. RISE TIME 50 nsec		
20. OUTPUT DEVICE (U) GaAS FET MMIC Amplifier			d. FALL TIME 50 nsec		
			e. COMP RATIO (U) NA		
			21. HARMONIC LEVEL		
22. SPURIOUS LEVEL (U) Less than -50dBc			a. 2nd (U) -57.7 dBc		
			b. 3rd (U) -65.6 dBc		
23. FCC TYPE ACCEPTANCE NO. (U) n/a			c. OTHER (U) -64 dBc (4 th)		
24. REMARKS (U) 7. Channel center frequencies are: 9.225, 9.250, 9.275, 9.325, 9.350, 9.375, 9.425, 9.450, 9.475, 9.525, 9.550, 9.575, 9.625, 9.650, 9.675, 9.725, 9.750 and 9.775 GHz (U) 14. Linear FM. Short Range mode: Sweeps 88 MHz in 1.75 msec at a rate of 513 Hz (sweeps/sec) Long Range mode: Sweeps 44 MHz in 1.75 msec at a rate of 513 Hz (sweeps/sec)					
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RECEIVER EQUIPMENT CHARACTERISTICS									
1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) R20SS 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) 9.225 GHz to 9.775 GHz					6. METHOD OF TUNING (U) Crystal synthesized				
7. RF CHANNELING CAPABILITY (U) under SW control (see remark)					8. EMISSION DESIGNATOR (U) 88MF3N for 6 channels centered at 9.25, 9.35, 9.45, 9.55, 9.65 and 9.75 GHz, 44MF3N for channels centered at 9.225, 9.275, 9.325, 9.375, 9.425, 9.475, 9.525, 9.575, 9.625, 9.675, 9.725 GHz and 9.775 GHz				
9. FREQUENCY TOLERANCE (U) ± 5 ppm									
10. IF SELECTIVITY					11. RF SELECTIVITY ☒ CALCULATED ☐ MEASURED a. -3 dB (U) < 3 GHz b. -20 dB (U) < 5 GHz c. -60 dB (U) n/a d. PRESELECTION TYPE (U) Patch antenna, inter-digital filter				
	1st	2nd	3rd						
a. -3 dB	(U) NA								
b. -20 dB	(U) NA								
c. -60 dB	(U) NA								
12. IF FREQUENCY					13. MAXIMUM POST DETECTION FREQUENCY (U) 5 MHz				
a. 1st (U) NA					14. MINIMUM POST DETECTION FREQUENCY (U) 5 kHz				
b. 2nd (U) NA									
c. 3rd (U) NA					16. MAXIMUM BIT RATE (U) NA				
15. OSCILLATOR TUNED			1st	2nd	3rd	17. SENSITIVITY			
a. ABOVE TUNED FREQUENCY						a. SENSITIVITY (U) -140 dBm			
b. BELOW TUNED FREQUENCY						b. CRITERIA (U) 10 dB S/N			
c. EITHER ABOVE OR BELOW THE FREQUENCY						c. NOISE FIG (U) 7 dB			
18. DE-EMPHASIS ☐ a. YES ☒ b. NO					d. NOISE TEMP (U) NA				
19. IMAGE REJECTION (U) NA					20. SPURIOUS REJECTION (U) NA				
21. REMARKS (U) 7. Channel center frequencies are: 9.225, 9.250, 9.275, 9.325, 9.350, 9.375, 9.425, 9.450, 9.475, 9.525, 9.550, 9.575, 9.625, 9.650, 9.675, 9.725, 9.750 and 9.775 GHz (U) 13. The target modifies the return signal based on range and speed resulting in approximately 5 kHz to 5 MHz at baseband.									
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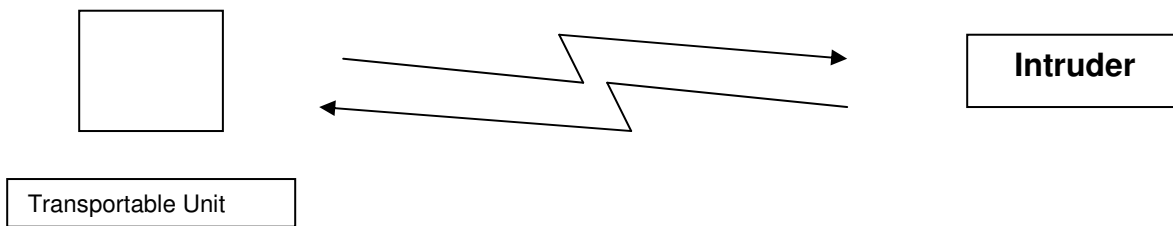
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ANTENNA EQUIPMENT CHARACTERISTICS				
1. ☒ a. TRANSMITTING ☐ b. RECEIVING ☐ c. TRANSMITTING AND RECEIVING				
2. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) R20SS Antenna		3. MANUFACTURER'S NAME (U) FLIR Radars		
4. FREQUENCY RANGE (U) 9.20 to 9.80 GHz		5. TYPE (U) Cavity Array		
6. POLARIZATION (U) Linear-Horizontal		7. SCAN CHARACTERISTICS		
		a. TYPE (U) Mechanically Scanned with optional Pan/Tilt		
8. GAIN		b. VERTICAL SCAN (U) Mechanically with optional Pan/Tilt		
a. MAIN BEAM (U) 17.5 dBi		(1) MAX ELEV (U) + 45 deg		
		(2) MIN ELEV (U) - 45 deg		
b. 1st MAJOR SIDE LOBE (U) -4 dBi at 15 deg elevation		(3) SCAN RATE (U) up to 30 deg/sec		
9. BEAMWIDTH		c. HORIZONTAL SCAN		
a. HORIZONTAL (U) 100 degrees		(1) SECTOR SCANNED (U) up to 360 degrees		
		(2) SCAN RATE (U) up to 30 deg/sec		
b. VERTICAL (U) 5 degrees		d. SECTOR BLANKING ☐ (1) YES ☒ (2) NO		
10. REMARKS				
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FLIR Radars
R20SS, Ground Surveillance Radar

9.20 GHz – 9.80 GHz

88MF3N

44MF3N



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4. FREQUENCY REQUIREMENTS a. FREQUENCY (U) 9.20 GHz – 9.80 GHz b. EMISSION DESIGNATOR (U) 88MF3N, 44MF3N			
5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (WARTIME USE) (U) Radar detection and tracking system used for Force protection, border surveillance and protection of high value assets. ☒ a. YES ☐ b. NO			
6. INFORMATION TRANSFER REQUIREMENTS (U) None			
7. ESTIMATED INITIAL COST OF THE SYSTEM (U) \$200,000 per unit			
8. TARGET DATE FOR			
a. APPLICATION APPROVAL (U) ASAP	b. SYSTEM ACTIVATION (U) 07/01/2013	c. SYSTEM TERMINATION (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 (U) See page 5		15. SPACE SYSTEMS (U) NA	
16. TYPE OF SERVICE FOR STAGE 4 (U) Radiolocation		17. STATION CLASS FOR STAGE 4 (U) LR	
18. REMARKS			
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