

FOR AGENDA

SPS



DEPARTMENT OF THE AIR FORCE
AF FREQUENCY MANAGEMENT AGENCY
2461 EISENHOWER AVE, HOFFMAN 1, SUITE 1203
ALEXANDRIA, VIRGINIA 22331-1500

5 January, 2006

MEMORANDUM FOR SECRETARY, SPECTRUM PLANNING SUBCOMMITTEE, IRAC

FROM: AFFMA/DON

SUBJECT: Application for Spectrum Review

The Application for Spectrum Review listed in the table below is submitted for review by the SPS under the provisions of Chapter 10 of the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management.

TITLE	J/F 12 #	PRIOR SPS	NSEP
DARPA NEXT GENERATION (XG) RADIO	9204	NO	NO

Please refer any questions regarding the above application to Wilbert Wells, 703-428-1511, FAX 703-429-1575. Email address is: wilbert.wells@pentagon.af.mil.

A handwritten signature in black ink, appearing to read "Jimmy Nguyen", is located above the name and title of the signatory.

JIMMY NGUYEN, GS-13, DAF
USAF SPS Member

Attachment:
AF DARPA XG Radio

APPLICATION FOR SPECTRUM REVIEW	CLASSIFICATION UNCLASSIFIED	PAGE 1
NTIA GENERAL INFORMATION		
1. APPLICATION TITLE (U) DARPA Next Generation (XG) Radio		
2. SYSTEM NOMENCLATURE (U) DARPA Next Generation (XG) Radio		
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) 225 MHz - 328.6 MHz 335.4 MHz - 399.9 MHz 420 MHz - 450 MHz b. EMISSION DESIGNATORS (U) (See Remarks) (See Remarks) (See Remarks)		
5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (U) Proof of concept demonstration of the technology of interference avoidance in a policy (rule) based radio to achieve high spectrum access. Program will develop sensors that can dynamically sense, characterize, react, and adapt to actual spectrum usage. XG technology will make increases in the (WARTIME USE) ☐ a. YES ☒ b. NO		
6. INFORMATION TRANSFER REQUIREMENTS (U) 6 Mbps data		
7. ESTIMATED INITIAL COST OF THE SYSTEM (U) NAvail		
8. TARGET DATE FOR		
a. APPLICATION APPROVAL (U) ASAP	b. SYSTEM ACTIVATION (U) 12/30/2005	c. SYSTEM TERMINATION (U) NAvail
9. SYSTEM RELATIONSHIP AND ESSENTIALITY (U) Next generation (XG) spectrum sharing concepts between XG enabled wireless networks of grounds vehicles, dismounted soldiers, and point-to-multipoint systems in an urban, rural or test range environment.		
10. REPLACEMENT INFORMATION (U) NA		
11. RELATED ANALYSIS AND/OR TEST DATA (U) Reports and analysis are in progress.		
12. NUMBER OF MOBILE UNITS (U) 6		
13. GEOGRAPHICAL AREA FOR		
a. STAGE 2 (U) Dahlgren, Va; Ft Dix, NJ; Ft Irwin & Camp Pendleton, CA (Remarks)		
b. STAGE 3 (U) NAvail		
c. STAGE 4 (U) NAvail		
14. LINE DIAGRAM (U) See Page(s) 5		15. SPACE SYSTEMS (U) See Page(s) NA
16. TYPE OF SERVICE(S) FOR STAGE 4 (U) No Specific Service		17. STATION CLASS(ES) FOR STAGE 4 (U) XT
18. REMARKS () Item 5 (continued): spectrum available for tactical world-wide operations while greatly reducing the time needed for spectrum planning, management, assignment and coordination. Item 13a (continued): Ft Huachuca, AZ; Ft Polk, LA; Ft Story, VA; Fort A.P. Hill, VA; Eastern Neck Wild Life Reserve, MD; Riverbend Park, VA; Quantico, VA; Vienna, VA; Laurel, MD; Annapolis, MD; Rural Locations in Maryland & Virginia; Idaho National Laboratory (INL), Idaho Falls, ID.		
DOWNGRADING INSTRUCTIONS		J/F 12/09204
		CLASSIFICATION UNCLASSIFIED

CLASSIFICATION UNCLASSIFIED		PAGE 2	
TRANSMITTER EQUIPMENT CHARACTERISTICS			
1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) DSA-2		2. MANUFACTURER'S NAME (U) Shared Spectrum Company	
3. TRANSMITTER INSTALLATION (U) Ground Vehicle & Buildings		4. TRANSMITTER TYPE (U) Digital Communications	
5. TUNING RANGE (U) 200 MHz - 600 MHz		6. METHOD OF TUNING (U) Synthesizer	
7. RF CHANNELING CAPABILITY (U) 225 MHz in 100 kHz Increments		8. EMISSION DESIGNATORS (U) 1M75G2D (U) 3M50G2D (U) 7M00G2D	
9. FREQUENCY TOLERANCE (U) 1 ppm		12. EMISSION BANDWIDTH ☒ CALCULATED ☐ MEASURED	
10. FILTER EMPLOYED (U) ☐ a. YES ☒ b. NO		a. -3 dB (U) 1613 KHz (U) 3226 KHz (U) 6452 KHz	
11. SPREAD SPECTRUM (U) ☐ a. YES ☒ b. NO		b. -20 dB (U) 1750 KHz (U) 3500 KHz (U) 7000 KHz	
13. MAXIMUM BIT RATE (U) 6 Mbps		c. -40 dB (U) NAvail (U) NAvail (U) NAvail	
14. MODULATION TECHNIQUES AND CODING (U) Orthogonal Frequency Division Multiplexing with variable data rate and turbo coding		d. -60 dB (U) 3043 KHz (U) 6087 KHz (U) 12175 KHz	
16. PRE-EMPHASIS (U) ☐ a. YES ☒ b. NO		e. OC-BW (U) 1750 KHz (U) 3500 KHz (U) 7000 KHz	
19. POWER		15. MAXIMUM MODULATION FREQUENCY (U) 6452 KHz	
a. MEAN (U) 100 mW (U) See Remarks (U) See Remarks - 10 W		17. DEVIATION RATIO (U) NAvail	
b. PEP (U) NA (U) (U)		18. PULSE CHARACTERISTICS	
20. OUTPUT DEVICE (U) Solid State		a. RATE (U) NA (U) NA (U) NA	
22. SPURIOUS LEVEL (U) -60 dB		b. WIDTH (U) NA (U) NA (U) NA	
23. FCC TYPE ACCEPTANCE NO. (U) NA		c. RISE TIME (U) NA (U) NA (U) NA	
24. REMARKS (U) Item 19 (continued): Power is incrementally adjustable from 100 milliwatts to 10 watts in 1 dB steps.		d. FALL TIME (U) NA (U) NA (U) NA	
		e. COMP RATIO (U) NA (U) NA (U) NA	
		21. HARMONIC LEVEL	
		a. 2nd (U) -50 dB	
		b. 3rd (U) -60 dB	
		c. OTHER (U) NAvail	
CLASSIFICATION UNCLASSIFIED		J/F 12/09204	

CLASSIFICATION UNCLASSIFIED				PAGE 3	
RECEIVER EQUIPMENT CHARACTERISTICS					
1. NOMENCLATURE, MANUFACTURER'S MODEL NO. (U) DSA-2			2. MANUFACTURER'S NAME (U) Shared Spectrum Company		
3. RECEIVER INSTALLATION (U) Ground Vehicle and Building			4. RECEIVER TYPE (U) Dual Conversion Superheterodyne		
5. TUNING RANGE (U) 200 MHz - 600 MHz			6. METHOD OF TUNING (U) Synthesizer		
7. RF CHANNELING CAPABILITY (U) 225 MHz, in 100 kHz Increments			8. EMISSION DESIGNATORS (U) (See Remarks)		
9. FREQUENCY TOLERANCE (U) 1 ppm			11. RF SELECTIVITY ☒ CALCULATED ☐ MEASURED		
10. IF SELECTIVITY			a. -3 dB (U) NAvail		
1st (U)			b. -20 dB (U) NAvail		
2nd (U)			c. -60 dB (U) NAvail		
3rd (U)			d. Preselection Type (U) Switchable Filter		
a. -3 dB NAvail			13. MAXIMUM POST DETECTION FREQUENCY (U) 6 MHz		
b. -20 dB NAvail			14. MINIMUM POST DETECTION FREQUENCY (U) NA		
c. -60 dB NAvail			16. MAXIMUM BIT RATE (U) 7 Mbps		
12. IF FREQUENCY			17. SENSITIVITY		
a. 1st (U) NAvail			a. SENSITIVITY (U) - 86 dBm		
b. 2nd (U) 13.5 MHz			b. CRITERIA (U) 13 dB SINAD		
c. 3rd (U) NA			c. NOISE FIG (U) 7 dB		
15. OSCILLATOR TUNED			d. NOISE TEMP (U) NA		
1st (U)			20. SPURIOUS REJECTION (U) 60 dB		
2nd (U)					
3rd (U)					
a. ABOVE TUNED FREQUENCY X					
b. BELOW TUNED FREQUENCY					
c. EITHER ABOVE OR BELOW THE FREQUENCY			X		
18. DE-EMPHASIS (U) ☐ a. YES ☒ b. NO					
19. IMAGE REJECTION (U) 60 dB					
21. REMARKS (U) Item 8 (continued): 1M75G2D, 3M50G2D, 7M00G2D.					
CLASSIFICATION UNCLASSIFIED				J/F 12/09204	

DARPA NEXT GENERATION (XG) RADIO

