## **APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION**

**CLASSIFICATION** 

DATE

Form Approved OMB No. 0704-0188

Unclassified

24 Sept, 2008

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AS APPROPRIATE.							
DOD GENERAL INFORMATION							
TO Director Navy and Marine Corps Spectrum Center 2461 Eisenhower Ave Alexandria, VA 22331-1400			FROM Commanding Officer NAVEODTECHDIV (Code 5221L) 2008 Stump Neck Rd. Indian Head, MD 20640				
APPLICATION TITLE     DTC Communications, Model Palladium II Digital Video Transmitter							
2. SYSTEM NOMENCLATURE Micro Air Vehicle (MAV) Explosive Ordnance Disposal (EOD)							
3. STAGE OF ALLOCATION (X one)  a. STAGE 1 - CONCEPTUAL  b. STAGE 2 - EXPERIMENTAL  c. STAGE 3 - DEVELOPMENTAL  X d. STAGE 4 - OPERATIONAL							4 - OPERATIONAL
4. FREQUENCY REQUIREMENTS		ı	10.017.020 02.722	01 111211712	u. 0	.,,,,,	
a. FREQUENCY REQUIREMENTS  a. FREQUENCY(IES) 4400MHz to 5000 MHz  b. EMISSION DESIGNATOR(S) 2M44W7D							
5. TARGET STARTING DATE FOR SUBSEQUE	NT STAGES						
a. STAGE 2 NA b. STAGE 3 NA				c. STAGE 4	24 Septe	embe	er, 2008
6. EXTENT OF USE 1 - 24 hrs per day, day/night							
7. GEOGRAPHICAL AREA FOR							
a. STAGE 2							
b. STAGE 3							
c. STAGE 4 US&P, Iraq, and Afghanista	ın						
8. NUMBER OF UNITS							
a. STAGE 2 b. STAGE 3 NA				c. STAGE 4	400		
9. NUMBER OF UNITS OPERATING SIMULTAN	IEOUSLY IN THE SAM	E EN\	/IRONMENT 2	? to 16			
10. OTHER J/F 12 APPLICATION NUMBER(S) T	О ВЕ		S THERE ANY OPER			NT AS	DESCRIBED IN
a. SUPERSEDED J/F 12/ b RELATED J/F 12/		•	a. YES	b. NO	Ī	x	c. NAvail
12. NAMES AND TELEPHONE NUMBERS			a. ILO	D. 140			C. NAVAII
a. PROGRAM MANAGER Brian Anderson			(1) COMMERCIAL 301-744-6906 (2) AUTOVON				
b. PROJECT ENGINEER Ray McGuire			(1) COMMERCIAL 301-744-6858 x273 (2) AUTOVON				
13. REMARKS							
DOWNGRADING INSTRUCTIONS			SSIFICATION				
N/A		U	nclassified				

CLASSIFICATION		PAGE				
Unclassified	2 of 7					
1. NOMENCLATURE, MANUFACTURER'S MODEL NO.	MENT CHARACTERISTICS  2. MANUFACTURER'S NAME					
PD2-TX-100-C	DTC Communications					
FD2-1X-100-C	D10 dominantations					
3. TRANSMITTER INSTALLATION	4. TRANSMITTER TYPE					
Micro Air Vehicle	PSK Communications Microwave	Transmitter				
5. TUNING RANGE	6. METHOD OF TUNING					
4400-5000MHz 7. RF CHANNELING CAPABILITY	PLL Tuning  8. EMISSION DESIGNATOR(S)					
4400 MHz, 100 KHz increments	U. LIMIOSION DESIGNATOR(S)					
9. FREQUENCY TOLERANCE	2M44W7D					
5.0 ppm						
10. FILTER EMPLOYED (X one)		†				
χ a. YES b. NO						
11. SPREAD SPECTRUM (X one)	12. EMISSION BANDWIDTH (X and comple	, ,				
X   a. YES   b. NO	+ · · · · · · · · · · · · · · · · · · ·	MEASURED				
3.45 Mbps (QPSK), 6.90 Mbps (16QAM)	a3 dB 2.35 MHz b20 dB 2.40 MHz					
14. MODULATION TECHNIQUES AND CODING	c40 dB 4.50 MHz					
Coded Orthogonal Frequency Division Multiplex	d60 dB 6.60 MHz					
(COFDM). MPEG-2, QPSK 400 Carriers	e. OC-BW 2.44 MHz					
	15. MAXIMUM MODULATION FREQUENCY					
to DDE EMPLIACIO (V)	5.5 MHz Video					
16. PRE-EMPHASIS (X one) a. YES X b. NO	17. DEVIATION RATIO					
a. YES X b. NO	N/A  18. PULSE CHARACTERISTICS N/A (frequency modulated)					
19. POWER	a. RATE N/A	mequency modulated)				
a. MEAN 100 mW, MAX	b. WIDTH N/A					
b. PEP N/A	c. RISE TIME N/A					
20. OUTPUT DEVICE	d. FALL TIME N/A					
Microwave FET Transistor	e. COMP RATIO N/A					
22. SPURIOUS LEVEL	21. HARMONIC LEVEL a. 2ND					
	-53 dB					
> -54 dBm	b. 3RD					
23. FCC TYPE ACCEPTANCE NO.	-54 dB					
N/A	c. OTHER					
	>-54 DB					
24. REMARKS	nomittor which allows the transmission of s	tandard vidae composite				
Item 1: PD2-TX-100-C, 100mW (max) output power digital video tra signals (CCIR405/1 NTSC) or PAL (user selectable) video signals,						
Non-40 Law Base Lawrend LO Eller The widely and emissions (I)	tardin in a considerated by a first boundaries of the considerate	ada and to the most to the				
Item 10: Low Pass Lumped L-C Filter. The wideband emissions fill circuitry employed in the transmitter, that is the amplifier stages in						
frequency response characteristics have a bandpass response which has sufficient harmonic and spurious rejection to comply with						
FCC spectral emissions limits. The actual on channel emissions response curve is detailed in item 12 and is determined by the nature of the digital modulation coding.						
Item 11: COFDM is considered a form of spread spectrum by the NTIA						
Item 14: 400 Carrier COFDM with individual QPSK or 16QAM modulation on each carrier						
Item 16: Pre-Emphasis is N/A for MPEG-2 Coding						
Item 23: FCC type acceptance is only required for operation in the 4950-4990MHz range. The operator of the MAV system has control						
of which frequencies the system is tuned and should only operate on the frequencies that are authorized for their location. Access to the public safety spectrum is provided to support OCONUS operations. This spectrum is easily excluded using the system channel						
definition table.						
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				R EQUIPME	NT CHARACTERISTICS		
1. NOMENCLATURE, MANUFACTURER'S MODEL NO.			EL NO.		2. MANUFACTURER'S NAME		
PD2-RX-C			DTC Communications				
3. RECEIVER INSTALLATION  Micro Air Vehicle Ground Control Station			4. RECEIVER TYPE Double Conversion Super Heterodyne				
5. TUNING RANGE					6. METHOD OF TUNING		
4400 - 5000 MHz					PLL Synthesizer		
7. RF CHANNELING CAPABILITY 100KHz increments			8. EMISSION DESIGNATOR(S) 2M44W7D				
9. FREQUENCY TOLERANG 50 PPM	CE						
10. IF SELECTIVITY	1ST	2	ND	3RD	11. RF SELECTIVITY (X and complete as applicable)		
a3 dB	N/A	8.0	MHz	2.6 MHz	CALCULATED X MEASURED		
b20 dB	N/A	9.5	MHz	2.9 MHz	a3 dB 700MHz b20 dB 1200MHz		
	N/A	40.5	50 MHz	20 MHz	c60 dB 3800MHz		
c60 dB	IN/A	12.5	OU WITH	ZU WITZ	d. PRESELECTION TYPE		
12. IF FREQUENCY					Lumped Band Pass Filter  13. MAXIMUM POST DETECTION FREQUENCY		
a. 1ST 50 - 850 N	1Hz				5.5 MHz (Video)		
b. 2ND 36.13 MHz					14. MINIMUM POST DETECTION FREQUENCY		
c. 3RD DSP Prima	ary Chann	el Filterii	ng		10 Hz (Video)		
15. OSCILLATOR TUNED		1ST	2ND	3RD	16. MAXIMUM BIT RATE 10 Mbps		
a. ABOVE TUNED FREQUENCY					17. SENSITIVITY		
b. BELOW TUNED FREQUENCY		x	X	N/A	a. SENSITIVITY -99 dBm		
c. EITHER ABOVE OR BELOW TUNED FREQUENCY  b. CRITERIA  4.0 dB (10 E-5 BER)					b. CRITERIA 4.0 dB (10 E-5 BER)		
18. DE-EMPHASIS (X one)					c. NOISE FIG 2.0 dB		
a. YES X b. NO			0	d. NOISE TEMP N/A			
19. IMAGE REJECTION >40	dB				20. SPURIOUS REJECTION > -40 dB		
21. REMARKS							
Item 1: The PD2-RX-C COFDM digital receiver is tunable (programmable) from 4400 - 5000MHz. It uses dual-receiver maximal ratio combining of signals, a technique which employs two space diversity (separate) antennas. Video, audio (2 channels) and data (RS-232) up to 115kbps can be demodulated.  Item13: The video standards which can be demodulated are CCIR405/1 NTSC and PAL (user selectable) with a bandwidth of 10Hz to 5.5MHz  Item 18: Digital MPEG-2 video coding does not employ de-emphasis							
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ANTENNA EQUIPMENT CHARACTERISTICS							
1. X a. TRANSMITTING b. RECEIVING	c. TRANSM	ITTING AND RECEIVING					
2. NOMENCLATURE, MANUFACTURER'S MODEL NO.	3. MANUFACTURER'S NAME						
ANT-A-2-C	DTC Communications						
ART AZ G							
4. FREQUENCY RANGE	5. TYPE						
4400 MHz – 4900 MHz	Dipole, ½ Wave						
6. POLARIZATION	7. SCAN CHARACTERISTICS						
Vertical	a. TYPE FIXED						
8. GAIN	b. VERTICAL SCAN						
a. MAIN BEAM	(1) MAX ELEV N/A						
2 dBi							
L ACT MA IOD CIDE I ODE	(2) MIN ELEV						
b. 1ST MAJOR SIDE LOBE	(2) SCAN DATE						
NA	(3) SCAN RATE N/A						
9. BEAMWIDTH	c. HORIZONTAL SCAN						
a. HORIZONTAL	(1) SECTOR SCANNED						
360 deg	N/A						
	(2) SCAN RATE N/A						
b. VERTICAL							
77 deg	d. SECTOR BLANKING (X one) (1) YES  X (2)	NO					
10. REMARKS	(1) TES X (2)	NO					
CLASSIFICATION							
Unclassified							

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ANTENNA EQUIPMENT CHARACTERISTICS							
1. A. TRANSMITTING X b. RECEIVING	c. TRANSMITTING AND RECEIVING						
2. NOMENCLATURE, MANUFACTURER'S MODEL NO.	3. MANUFACTURER'S NAME						
COL-5-C	DTC Communications						
4. FREQUENCY RANGE	5. TYPE						
4400 MHz – 4900 MHz	Collinear						
6. POLARIZATION	7. SCAN CHARACTERISTICS						
Vertical	a. TYPE <b>FIXED</b>						
8. GAIN	b. VERTICAL SCAN						
a. MAIN BEAM	(1) MAX ELEV N/A						
6 dBi							
b. 1ST MAJOR SIDE LOBE	(2) MIN ELEV N/A						
NA	(3) SCAN RATE						
NA	N/A						
9. BEAMWIDTH	c. HORIZONTAL SCAN						
a. HORIZONTAL	(1) SECTOR SCANNED N/A						
360 deg							
b. VERTICAL	(2) SCAN RATE N/A						
77 deg	d. SECTOR BLANKING (X one)						
TT deg	(1) YES X (2) NO						
CLASSIFICATION Unclassified							

Table 1

CLASSIFICATION		PAGE	
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	Cholacomoa	0 01 7	
	ANTENNA CONTINUATION PAGE		
MAV G	Video & Serial Data  Tound Control Station	MAV Air Vehicle	
	Unclassified		

APPLICATION FOR	APPLICATION FOR CLASSIFICATION						
SPECTRUM REVIEW	N						
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	NTIA GENERA	L INFORMATION					
1. APPLICATION TITLE DTC Communications, Model	Palladium II Digital Video Tra	ansmitter					
2. SYSTEM NOMENCLATURE Micro Air Vehicle (MAV) Explo	osive Ordnance Disposal (EC	DD)					
3. STAGE OF ALLOCATION (X one)							
a. STAGE 1 - CONCEPTUAL	b. STAGE 2 - EXPERIMENTAL	c. STAGE 3 - DEVEL	OPMENTAL	X d. STAGE 4 - OPERATIONAL			
4. FREQUENCY REQUIREMENTS				•			
a. FREQUENCY(IES) 4400MHz to 5000 MHz							
b. EMISSION DESIGNATOR(S) 2M44W7D							
5. PURPOSE OF SYSTEM, OPERATION	ONAL AND SYSTEM CONCEPTS	(WARTIME USE)	(X one)	X a. YES b. NO			
	e, surveillance, targeting, ice EOD forces during mil	•	STA) of IEI	Os and unexploded			
6. INFORMATION TRANSFER REQUI	REMENTS 10 Mbps						
7. ESTIMATED INITIAL COST OF THE	•	ated \$ for Block II con	figuration)				
8. TARGET DATE FOR	<u> </u>						
a. APPLICATION APPROVAL	b. SYSTEM ACTIVATION		c. SYSTEM T	ERMINATION			
June 2008	Sept 2008	3					
9. SYSTEM RELATIONSHIP AND ESS	SENTIALITY						
Joint EOD Operations							
10. REPLACEMENT INFORMATION NA							
11. RELATED ANALYSIS AND TEST I	DATA						
12. NUMBER OF MOBILE UNITS							
100							
13. GEOGRAPHICAL AREA FOR							
a. STAGE 2 <b>N/A</b>							
b. STAGE 3 NA							
c. STAGE 4 US&P, Iraq, and Afghanistan							
14. LINE DIAGRAM See Page(s) 6  15. SPACE SYSTEMS See Page(s) NA							
16. TYPE OF SERVICE(S) FOR STAGE 4 Mobile  17. STATION CLASS(ES) FOR STAGE 4 MO							
18. REMARKS							
Item 7: System consist of 2 Micro Air Vehicles and 1 Ground Control Station							
DOWNGRADING INSTRUCTIONS		CLASSIFICATION					
		-					
N/A		Unclassified					