

<b>APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION</b>		CLASSIFICATION UNCLASSIFIED	DATE	FORM APPROVED OMB No. 0704-0188 Page 1 of Pages
<b>DOD GENERAL INFORMATION</b>				
TO		FROM		
1. APPLICATION TITLE				
2. SYSTEM NOMENCLATURE				
3. STAGE OF ALLOCATION <input type="checkbox"/> a. STAGE 1 <input type="checkbox"/> b. STAGE 2 <input type="checkbox"/> c. STAGE 3 <input type="checkbox"/> d. STAGE 4 <i>(X one)</i> CONCEPTUAL                      EXPERIMENTAL                      DEVELOPMENTAL                      OPERATIONAL				
4. FREQUENCY REQUIREMENTS a. FREQUENCY(IES) b. EMISSION DESIGNATOR(S)				
5. TARGET STARTING DATE FOR SUBSEQUENT STAGES				
a. STAGE 2		b. STAGE 3		c. STAGE 4
6. EXTENT OF USE				
7. GEOGRAPHICAL AREA FOR				
a. STAGE 2				
b. STAGE 3				
c. STAGE 4				
8. NUMBER OF UNITS				
a. STAGE 2		b. STAGE 3		c. STAGE 4
9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT				
10. OTHER J/F 12 APPLICATION NUMBER(S) TO BE <input type="checkbox"/> a. SUPERSEDED J/F 12/ <input type="checkbox"/> b. RELATED J/F 12/			11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11? <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO <input type="checkbox"/> c. NAvail	
12. NAMES AND TELEPHONE NUMBERS				
a. PROGRAM MANAGER		(1) COMMERCIAL	(2) AUTOVON	
b. PROJECT ENGINEER		(1) COMMERCIAL	(2) AUTOVON	
13. REMARKS				
DOWNGRADING INSTRUCTIONS N/A		CLASSIFICATION UNCLASSIFIED		

**TRANSMITTER EQUIPMENT CHARACTERISTICS**

<b>1. NOMENCLATURE, MANUFACTURER'S MODEL NO.</b> MHX1320 (FAST MODE)	<b>2. MANUFACTURER'S NAME</b> Microhard Systems Inc.														
<b>3. TRANSMITTER INSTALLATION</b>	<b>4. TRANSMITTER TYPE</b> FM														
<b>5. TUNING RANGE</b> 1350 – 1390 MHz	<b>6. METHOD OF TUNING</b> Synthesis PLL														
<b>7. RF CHANNELING CAPABILITY</b> 1350 – 1390 MHz w/ <50 Hertz increments	<b>8. EMISSION DESIGNATOR(S)</b>  FM Modulated 300kF1D														
<b>9. FREQUENCY TOLERANCE</b> 2.0 PPM															
<b>10. FILTER EMPLOYED</b> ( <i>X one</i> ) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO															
<b>11. SPREAD SPECTRUM</b> ( <i>X one</i> ) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO	<b>12. EMISSION BANDWIDTH</b> ( <i>X and complete as applicable</i> ) <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED														
<b>13. MAXIMUM BIT RATE</b> 230.4 kbps	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><b>a. -3 dB</b></td> <td style="text-align: right;">150 kHz</td> </tr> <tr> <td><b>b. -20 dB</b></td> <td style="text-align: right;">300 kHz</td> </tr> <tr> <td><b>c. -40 dB</b></td> <td style="text-align: right;">750 kHz</td> </tr> <tr> <td><b>d. -60 dB</b></td> <td style="text-align: right;">1400 kHz</td> </tr> <tr> <td><b>e. OC-BW</b></td> <td style="text-align: right;">300 kHz</td> </tr> </table>	<b>a. -3 dB</b>	150 kHz	<b>b. -20 dB</b>	300 kHz	<b>c. -40 dB</b>	750 kHz	<b>d. -60 dB</b>	1400 kHz	<b>e. OC-BW</b>	300 kHz				
<b>a. -3 dB</b>	150 kHz														
<b>b. -20 dB</b>	300 kHz														
<b>c. -40 dB</b>	750 kHz														
<b>d. -60 dB</b>	1400 kHz														
<b>e. OC-BW</b>	300 kHz														
<b>14. MODULATION TECHNIQUES AND CODING</b> CPFSK	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><b>15. MAXIMUM MODULATION FREQUENCY</b></td> <td style="text-align: right;">116 kHz</td> </tr> </table>	<b>15. MAXIMUM MODULATION FREQUENCY</b>	116 kHz												
<b>15. MAXIMUM MODULATION FREQUENCY</b>	116 kHz														
<b>16. PRE-EMPHASIS</b> ( <i>X one</i> ) <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO	<b>17. DEVIATION RATIO</b> 1.25														
<b>19. POWER</b>	<b>18. PULSE CHARACTERISTICS</b> N/A (frequency modulated)														
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><b>a. MEAN</b></td> <td style="text-align: right;">up to 1 Watt</td> </tr> <tr> <td><b>b. PEP</b></td> <td style="text-align: right;">up to 1 Watt</td> </tr> </table>	<b>a. MEAN</b>	up to 1 Watt	<b>b. PEP</b>	up to 1 Watt	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><b>a. RATE</b></td> <td></td> </tr> <tr> <td><b>b. WIDTH</b></td> <td></td> </tr> <tr> <td><b>c. RISE TIME</b></td> <td></td> </tr> <tr> <td><b>d. FALL TIME</b></td> <td></td> </tr> <tr> <td><b>e. COMP RATIO</b></td> <td></td> </tr> </table>	<b>a. RATE</b>		<b>b. WIDTH</b>		<b>c. RISE TIME</b>		<b>d. FALL TIME</b>		<b>e. COMP RATIO</b>	
<b>a. MEAN</b>	up to 1 Watt														
<b>b. PEP</b>	up to 1 Watt														
<b>a. RATE</b>															
<b>b. WIDTH</b>															
<b>c. RISE TIME</b>															
<b>d. FALL TIME</b>															
<b>e. COMP RATIO</b>															
<b>20. OUTPUT DEVICE</b> Transistor	<b>21. HARMONIC LEVEL</b>														
<b>22. SPURIOUS LEVEL</b> -60 dBc	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><b>a. 2nd</b></td> <td style="text-align: right;">-40 dBc</td> </tr> <tr> <td><b>b. 3rd</b></td> <td></td> </tr> <tr> <td><b>c. OTHER</b></td> <td></td> </tr> </table>	<b>a. 2nd</b>	-40 dBc	<b>b. 3rd</b>		<b>c. OTHER</b>									
<b>a. 2nd</b>	-40 dBc														
<b>b. 3rd</b>															
<b>c. OTHER</b>															
<b>23. FCC TYPE ACCEPTANCE NO.</b>  N/A	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><b>a. 2nd</b></td> <td style="text-align: right;">-40 dBc</td> </tr> <tr> <td><b>b. 3rd</b></td> <td></td> </tr> <tr> <td><b>c. OTHER</b></td> <td></td> </tr> </table>	<b>a. 2nd</b>	-40 dBc	<b>b. 3rd</b>		<b>c. OTHER</b>									
<b>a. 2nd</b>	-40 dBc														
<b>b. 3rd</b>															
<b>c. OTHER</b>															

**24. REMARKS**

**Microhard Systems Inc.**  
 #17, 2135 – 32<sup>nd</sup> Avenue NE  
 Calgary, AB, Canada  
 T2E 6Z3  
 Phone: (403) 248-0028  
 Fax: (403) 248-2762  
 Attn: Hany Shenouda

This radio can be used in a fixed frequency mode or a frequency hopping mode where 50 frequency can be program into the radio in less than 50 Hertz resolution between 1350 to 1390 MHz

**RECEIVER EQUIPMENT CHARACTERISTICS**

<b>1. NOMENCLATURE, MANUFACTURER'S MODEL NO.</b> MHX1320 (FAST MODE)				<b>2. MANUFACTURER'S NAME</b> Microhard Systems Inc.							
<b>3. RECEIVER INSTALLATION</b>				<b>4. RECEIVER TYPE</b> Dual Conversion Superheterodyne							
<b>5. TUNING RANGE</b> 1350 – 1390 MHz				<b>6. METHOD OF TUNING</b> Synthesis PLL							
<b>7. RF CHANNELING CAPABILITY</b> 1350 – 1390 MHz w/ <50 Hertz increments				<b>8. EMISSION DESIGNATOR(S)</b> FM Modulated Receiver							
<b>9. FREQUENCY TOLERANCE</b> 2.0 PPM				<b>11. RF SELECTIVITY (X and complete as applicable)</b> <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED							
<b>10. IF SELECTIVITY</b>		<b>1st</b>	<b>2nd</b>					<b>3rd</b>			
a. -3 dB		450 kHz	280 kHz								
b. -20 dB		590 kHz	650 kHz								
c. -60 dB		800 kHz	1.25 MHz		a. -3 dB						
<b>12. IF FREQUENCY</b>				b. -20 dB							
a. 1st      243.95 MHz				c. -60 dB							
b. 2nd      10.7 MHz				d. Preselection Type Front end LC Filter							
c. 3rd				<b>13. MAXIMUM POST DETECTION FREQUENCY</b> 120 kHz							
<b>15. OSCILLATOR TUNED</b>				<b>1st</b>		<b>2nd</b>		<b>3rd</b>			
				a. ABOVE TUNED FREQUENCY		X		X		<b>17. SENSITIVITY</b>	
				b. BELOW TUNED FREQUENCY						a. SENSITIVITY      -105 dBm (230.4kbps)	
c. EITHER ABOVE OR BELOW THE FREQUENCY								b. CRITERIA      10 <sup>-6</sup> BER S/N = 12dB			
<b>18. DE-EMPHASIS (X one)</b> <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO										c. NOISE FIG      < 3 dB	
<b>19. IMAGE REJECTION</b> - 60 dBc										d. NOISE TEMP      N/A	
<b>20. SPURIOUS REJECTION</b> > 60 dBc				<b>21. REMARKS</b>							

**Microhard Systems Inc.**  
 #17, 2135 – 32<sup>nd</sup> Avenue NE  
 Calgary, AB, Canada  
 T2E 6Z3  
 Phone: (403) 248-0028  
 Fax: (403) 248-2762  
 Attn: Hany Shenouda

Item 11. RF selectivity for the front end of the Receiver Only. This radio can be used in a fixed frequency mode or a frequency hopping mode where 50 frequency can be program into the radio in less than 50Hertz resolution between 1350 to 1390 MHz

**ANTENNA EQUIPMENT CHARACTERISTICS**

1. <input type="checkbox"/> a. TRANSMITTING <input type="checkbox"/> b. RECEIVING <input type="checkbox"/> c. TRANSMITTING AND RECEIVING	
2. NOMENCLATURE, MANUFACTURER'S MODEL NO.	3. MANUFACTURER'S NAME
4. FREQUENCY RANGE	5. TYPE
6. POLARIZATION	7. SCAN CHARACTERISTICS
8. GAIN	a. TYPE
a. MAIN BEAM	b. VERTICAL SCAN
b. 1st MAJOR SIDE LOBE	(1) Max Elev
	(2) Min Elev
	(3) Scan Rate
9. BEAMWIDTH	c. HORIZONTAL SCAN
a. HORIZONTAL	(1) Sector Scanned
b. VERTICAL	(2) Scan Rate
	d. SECTOR BLANKING ( <i>X one</i> )
	<input type="checkbox"/> (1) YES <input type="checkbox"/> (2) NO

10. REMARKS	
-------------	--



<b>APPLICATION FOR SPECTRUM REVIEW</b>	CLASSIFICATION: <b>UNCLASSIFIED</b>	PAGE _____ of Pages _____
<b>NTIA GENERAL INFORMATION</b>		
1. APPLICATION TITLE		
2. SYSTEM NOMENCLATURE		
3. STAGE OF ALLOCATION ( <i>X one</i> )		
<input type="checkbox"/> a. STAGE 1 CONCEPTUAL	<input type="checkbox"/> b. STAGE 2 EXPERIMENTAL	<input type="checkbox"/> c. STAGE 3 DEVELOPMENTAL
<input type="checkbox"/> d. STAGE 4 OPERATIONAL		
4. FREQUENCY REQUIREMENTS		
a. FREQUENCY(IES)		
b. EMISSION DESIGNATOR(S)		
5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (WARTIME USE) ( <i>X one</i> )		
<input type="checkbox"/> a. YES <input type="checkbox"/> b. NO		
6. INFORMATION TRANSFER REQUIREMENTS		
7. ESTIMATED INITIAL COST OF THE SYSTEM		
8. TARGET DATE FOR		
a. APPLICATION APPROVAL	b. SYSTEM ACTIVATION	c. SYSTEM TERMINATION
9. SYSTEM RELATIONSHIP AND ESSENTIALITY		
10. REPLACEMENT INFORMATION		
11. RELATED ANALYSIS AND/OR TEST DATA		
12. NUMBER OF MOBILE UNITS		
13. GEOGRAPHICAL AREA FOR		
a. STAGE 2		
b. STAGE 3		
c. STAGE 4		
14. LINE DIAGRAM See page(s)	15. SPACE SYSTEMS See page(s)	
16. TYPE OF SERVICE(S) FOR STAGE 4	17. STATION CLASS(ES) FOR STAGE 4	
18. REMARKS		
DOWNGRADING INSTRUCTIONS N/A	CLASSIFICATION UNCLASSIFIED	

<b>APPLICATION FOR FOREIGN SPECTRUM SUPPORT</b>	<b>CLASSIFICATION: UNCLASSIFIED</b>	<b>PAGE</b> _____ <b>of Pages</b> _____
<b>FOREIGN COORDINATION GENERAL INFORMATION</b>		
<b>1. APPLICATION TITLE</b>		
<b>2. SYSTEM NOMENCLATURE</b>		
<b>3. STAGE OF ALLOCATION</b> ( <i>X one</i> ) <input type="checkbox"/> a. STAGE 1 CONCEPTUAL <input type="checkbox"/> b. STAGE 2 EXPERIMENTAL <input type="checkbox"/> c. STAGE 3 DEVELOPMENTAL <input type="checkbox"/> d. STAGE 4 OPERATIONAL		
<b>4. FREQUENCY REQUIREMENTS</b> a. FREQUENCY(IES) b. EMISSION DESIGNATOR(S)		
<b>5. PROPOSED OPERATING LOCATIONS OUTSIDE US&amp;P</b>		
<b>6. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS</b>		
<b>7. INFORMATION TRANSFER REQUIREMENTS</b>		
<b>8. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT</b>		
<b>9. REPLACEMENT INFORMATION</b>		
<b>10. LINE DIAGRAM</b> See page(s)	<b>11. SPACE SYSTEMS</b> See page(s)	
<b>12. PROJECTED OPERATIONAL DEPLOYMENT DATE</b>		
<b>13. REMARKS</b>		
<b>DOWNGRADING INSTRUCTIONS</b> N/A	<b>CLASSIFICATION</b> UNCLASSIFIED	