

APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION		CLASSIFICATION UNCLASSIFIED	DATE	FORM APPROVED OMB No. 0704-0188 Page 1 of Pages
DOD GENERAL INFORMATION				
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 (X one) 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 a. SUPERSEDED J/F 12/ 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

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. MHX320 (310 to 390 MHz model)	2. MANUFACTURER'S NAME Microhard Systems Inc.										
3. TRANSMITTER INSTALLATION	4. TRANSMITTER TYPE FM										
5. TUNING RANGE 310 – 390 MHz	6. METHOD OF TUNING Synthesis PLL										
7. RF CHANNELING CAPABILITY 310 – 390 MHz w/ <50 Hertz increments	8. EMISSION DESIGNATOR(S) FM Modulated 280kF1D										
9. FREQUENCY TOLERANCE 1.5 PPM											
10. FILTER EMPLOYED (X one) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO											
11. SPREAD SPECTRUM (X one) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO	12. EMISSION BANDWIDTH (X and complete as applicable) <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED										
13. MAXIMUM BIT RATE 230.4 kbps	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">a. -3 dB</td> <td style="text-align: right;">95 kHz</td> </tr> <tr> <td>b. -20 dB</td> <td style="text-align: right;">280 kHz</td> </tr> <tr> <td>c. -40 dB</td> <td style="text-align: right;">750 kHz</td> </tr> <tr> <td>d. -60 dB</td> <td style="text-align: right;">1400 kHz</td> </tr> <tr> <td>e. OC-BW</td> <td style="text-align: right;">300 kHz</td> </tr> </table>	a. -3 dB	95 kHz	b. -20 dB	280 kHz	c. -40 dB	750 kHz	d. -60 dB	1400 kHz	e. OC-BW	300 kHz
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b. -20 dB	280 kHz										
c. -40 dB	750 kHz										
d. -60 dB	1400 kHz										
e. OC-BW	300 kHz										
14. MODULATION TECHNIQUES AND CODING CPFSK	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">15. MAXIMUM MODULATION FREQUENCY</td> <td style="text-align: right;">116 kHz</td> </tr> </table>	15. MAXIMUM MODULATION FREQUENCY	116 kHz								
15. MAXIMUM MODULATION FREQUENCY	116 kHz										
16. PRE-EMPHASIS (X one) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO	17. DEVIATION RATIO 1.25										
19. POWER <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">a. MEAN</td> <td style="text-align: right;">up to 1 Watt</td> </tr> <tr> <td>b. PEP</td> <td style="text-align: right;">up to 1Watt</td> </tr> </table>	a. MEAN	up to 1 Watt	b. PEP	up to 1Watt	18. PULSE CHARACTERISTICS N/A (frequency modulated)						
a. MEAN	up to 1 Watt										
b. PEP	up to 1Watt										
20. OUTPUT DEVICE Transistor	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 60%;">a. RATE</td></tr> <tr><td>b. WIDTH</td></tr> <tr><td>c. RISE TIME</td></tr> <tr><td>d. FALL TIME</td></tr> <tr><td>e. COMP RATIO</td></tr> </table>	a. RATE	b. WIDTH	c. RISE TIME	d. FALL TIME	e. COMP RATIO					
a. RATE											
b. WIDTH											
c. RISE TIME											
d. FALL TIME											
e. COMP RATIO											
22. SPURIOUS LEVEL -60 dBc	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">a. 2nd</td> <td style="text-align: right;">-60 dBc</td> </tr> <tr> <td>b. 3rd</td> <td style="text-align: right;">-70 dBc</td> </tr> <tr> <td>c. OTHER</td> <td></td> </tr> </table>	a. 2nd	-60 dBc	b. 3rd	-70 dBc	c. OTHER					
a. 2nd	-60 dBc										
b. 3rd	-70 dBc										
c. OTHER											
23. FCC TYPE ACCEPTANCE NO. N/A	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">a. 2nd</td> <td style="text-align: right;">-60 dBc</td> </tr> <tr> <td>b. 3rd</td> <td style="text-align: right;">-70 dBc</td> </tr> <tr> <td>c. OTHER</td> <td></td> </tr> </table>	a. 2nd	-60 dBc	b. 3rd	-70 dBc	c. OTHER					
a. 2nd	-60 dBc										
b. 3rd	-70 dBc										
c. OTHER											

24. REMARKS

Microhard Systems Inc.

#17, 2135 – 32nd 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 50Hertz resolution between 310 to 390 MHz

RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. MHX320 (310 to 390 MHz model)				2. MANUFACTURER'S NAME Microhard Systems Inc.				
3. RECEIVER INSTALLATION				4. RECEIVER TYPE Dual Conversion Superheterodyne				
5. TUNING RANGE 310 – 390 MHz				6. METHOD OF TUNING Synthesis PLL				
7. RF CHANNELING CAPABILITY 310 – 390 MHz w/ <50 Hertz increments				8. EMISSION DESIGNATOR(S) FM Modulated Receiver				
9. FREQUENCY TOLERANCE 1.5 PPM				11. RF SELECTIVITY (X and complete as applicable) <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED				
10. IF SELECTIVITY		1st	2nd					3rd
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 100MHz			
						b. -20 dB 150 MHz		
						c. -60 dB 280 MHz		
12. IF FREQUENCY				d. Preselection Type Front end LC Filter				
a. 1st		243.95MHz		13. MAXIMUM POST DETECTION FREQUENCY 120 kHz				
b. 2nd		10.7MHz (Fast Rx)		14. MINIMUM POST DETECTION FREQUENCY N/A				
c. 3rd				16. MAXIMUM BIT RATE 230.4 kbps				
15. OSCILLATOR TUNED				17. SENSITIVITY				
		1st	2nd	3rd		a. SENSITIVITY -105 dBm (230.4kbps)		
a. ABOVE TUNED FREQUENCY		X	X			b. CRITERIA 10 ⁻⁶ BER S/N = 12dB Typical		
b. BELOW TUNED FREQUENCY						c. NOISE FIG < 3 dB		
c. EITHER ABOVE OR BELOW THE FREQUENCY						d. NOISE TEMP N/A		
18. DE-EMPHASIS (X one) X a. YES <input type="checkbox"/> b. NO				20. SPURIOUS REJECTION > 60 dBc				
19. IMAGE REJECTION - 60 dBc								

21. REMARKS

Microhard Systems Inc.
 #110 1144-29th Avenue NE
 Calgary, AB, Canada
 T2E 7P1
 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 310 to 390 MHz

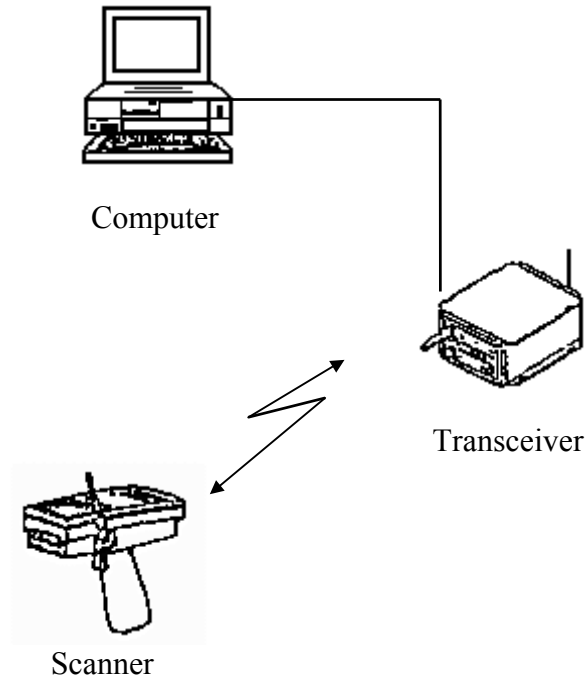
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ANTENNA EQUIPMENT CHARACTERISTICS

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	
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SAMPLE LINE DIAGRAM



This entire system is configured to operate within warehouse buildings. Some internal antennae may be necessary to allow uninterrupted communication between the bar code scanners and the base station within the building. The base station transceiver will be networked to directly to the server. Data will be transferred via RF between bar code scanners and the base station. The server will also be networked to other Family Housing terminals.

APPLICATION FOR SPECTRUM REVIEW		CLASSIFICATION: UNCLASSIFIED	PAGE _____ of Pages
NTIA GENERAL INFORMATION			
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	

APPLICATION FOR FOREIGN SPECTRUM SUPPORT	CLASSIFICATION: UNCLASSIFIED	PAGE _____ of Pages _____
FOREIGN COORDINATION GENERAL INFORMATION		
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. PROPOSED OPERATING LOCATIONS OUTSIDE US&P		
6. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS		
7. INFORMATION TRANSFER REQUIREMENTS		
8. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT		
9. REPLACEMENT INFORMATION		
10. LINE DIAGRAM See page(s)	11. SPACE SYSTEMS See page(s)	
12. PROJECTED OPERATIONAL DEPLOYMENT DATE		
13. REMARKS		
DOWNGRADING INSTRUCTIONS N/A	CLASSIFICATION UNCLASSIFIED	