

<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 (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 a. SUPERSEDED J/F 12/ 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**

<b>1. NOMENCLATURE, MANUFACTURER'S MODEL NO.</b>  <b>n1720F</b> (Serial Version) <b>IPn1720F</b> (Ethernet / USB Version)	<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> 1670 to 1700 MHz	<b>6. METHOD OF TUNING</b> Synthesis PLL															
<b>7. RF CHANNELING CAPABILITY</b> 1670 to 1700 MHz w/ <100 Hertz increments	<b>8. EMISSION DESIGNATOR(S)</b>  FM Modulated 280kF1D @ 230kbps 480kF1D @ 345kbps															
<b>9. FREQUENCY TOLERANCE</b> 2.5 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 / 345 kbps -NT (option)	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;"><b>a. -3 dB</b></td> <td style="width:35%;">150 kHz (230kbps)</td> <td style="width:35%;">225kHz (345kbps)</td> </tr> <tr> <td><b>b. -20 dB</b></td> <td>280 kHz (230kbps)</td> <td>375kHz (345kbps)</td> </tr> <tr> <td><b>c. -40 db</b></td> <td>540 kHz (230kbps)</td> <td>775kHz (345kbps)</td> </tr> <tr> <td><b>d. -60 dB</b></td> <td>1100 kHz (230kbps)</td> <td>1.25MHz (345kbps)</td> </tr> <tr> <td><b>e. OC-BW</b></td> <td>290 kHz (230kbps)</td> <td>485kHz (345kbps)</td> </tr> </table>	<b>a. -3 dB</b>	150 kHz (230kbps)	225kHz (345kbps)	<b>b. -20 dB</b>	280 kHz (230kbps)	375kHz (345kbps)	<b>c. -40 db</b>	540 kHz (230kbps)	775kHz (345kbps)	<b>d. -60 dB</b>	1100 kHz (230kbps)	1.25MHz (345kbps)	<b>e. OC-BW</b>	290 kHz (230kbps)	485kHz (345kbps)
<b>a. -3 dB</b>	150 kHz (230kbps)	225kHz (345kbps)														
<b>b. -20 dB</b>	280 kHz (230kbps)	375kHz (345kbps)														
<b>c. -40 db</b>	540 kHz (230kbps)	775kHz (345kbps)														
<b>d. -60 dB</b>	1100 kHz (230kbps)	1.25MHz (345kbps)														
<b>e. OC-BW</b>	290 kHz (230kbps)	485kHz (345kbps)														
<b>14. MODULATION TECHNIQUES AND CODING</b> CPFSK	<b>15. MAXIMUM MODULATION FREQUENCY</b> 116kHz															
<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> 0.5 to 1															
<b>19. POWER</b>	<b>18. PULSE CHARACTERISTICS</b> N/A (frequency modulated)															
<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"><b>a. MEAN</b>      up to 1 Watt (optional higher power available 2W)</td> <td style="width:50%;"><b>a. RATE</b></td> </tr> <tr> <td><b>b. PEP</b>      up to 1Watt</td> <td><b>b. WIDTH</b></td> </tr> </table>	<b>a. MEAN</b> up to 1 Watt (optional higher power available 2W)	<b>a. RATE</b>	<b>b. PEP</b> up to 1Watt	<b>b. WIDTH</b>	<b>c. RISE TIME</b>											
<b>a. MEAN</b> up to 1 Watt (optional higher power available 2W)	<b>a. RATE</b>															
<b>b. PEP</b> up to 1Watt	<b>b. WIDTH</b>															
<b>20. OUTPUT DEVICE</b> HBT	<b>d. FALL TIME</b>															
<b>22. SPURIOUS LEVEL</b> -60 dBc	<b>e. COMP RATIO</b>															
<b>23. FCC TYPE ACCEPTANCE NO.</b>  N/A	<b>21. HARMONIC LEVEL</b>															
	<b>a. 2<sup>nd</sup></b> <-54 dBc															
	<b>b. 3<sup>rd</sup></b> <-54 dBc															
	<b>c. OTHER</b>															

**24. REMARKS**  
 BOX 19.    2W order Option available for Government Users "-2W"

**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 100Hertz resolution between 1670 to 1700 MHz

**RECEIVER EQUIPMENT CHARACTERISTICS**

<b>1. NOMENCLATURE, MANUFACTURER'S MODEL NO.</b> n1720F (Serial Version)      IPn1720F (Ethernet / USB Version)				<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> 1670 to 1700 MHz				<b>6. METHOD OF TUNING</b> Synthesis PLL			
<b>7. RF CHANNELING CAPABILITY</b> 1670 to 1700 MHz w/ <100 Hertz increments				<b>8. EMISSION DESIGNATOR(S)</b> FM Modulated  Receiver			
<b>9. FREQUENCY TOLERANCE</b> 2.5 PPM				<b>11. RF SELECTIVITY (X and complete as applicable)</b> <input type="checkbox"/> CALCULATED <input checked="" type="checkbox"/> MEASURED  <b>a. -3 dB</b> 50MHz  <b>b. -20 dB</b> 90 MHz  <b>c. -60 dB</b> 150 MHz  <b>d. Preselection Type</b> SAW Bandpass Filter			
<b>10. IF SELECTIVITY</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>				
<b>a. -3 dB</b>	450 kHz	280kHz / 500kHz					
<b>b. -20 dB</b>	650kHz	740 kHz / 850 kHz					
<b>c. -60 dB</b>	1.3MHz	1600 kHz / 2000 kHz		<b>13. MAXIMUM POST DETECTION FREQUENCY</b> 120kHz @ 230.4kpbs    175 kHz @ 345kpbs			
<b>12. IF FREQUENCY</b>				<b>14. MINIMUM POST DETECTION FREQUENCY</b> N/A			
<b>a. 1st</b>	<b>243.95MHz</b>			<b>16. MAXIMUM BIT RATE</b> 230.4 kbps			
<b>b. 2nd</b>	<b>10.7MHz</b>			<b>17. SENSITIVITY</b>			
<b>c. 3rd</b>							
<b>15. OSCILLATOR TUNED</b>						<b>a. SENSITIVITY</b> -105 dBm	
<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>b. CRITERIA</b> 10 <sup>-4</sup> BER				
<b>a. ABOVE TUNED FREQUENCY</b>	X	X	<b>c. NOISE FIG</b> ≈ 4.3 dB				
<b>b. BELOW TUNED FREQUENCY</b>			<b>d. NOISE TEMP</b> N/A				
<b>c. EITHER ABOVE OR BELOW THE FREQUENCY</b>			<b>18. DE-EMPHASIS (X one)</b> <input type="checkbox"/> a. YES      X b. NO				
<b>19. IMAGE REJECTION</b> - 60 dBc				<b>20. SPURIOUS REJECTION</b> > 60 dBc			

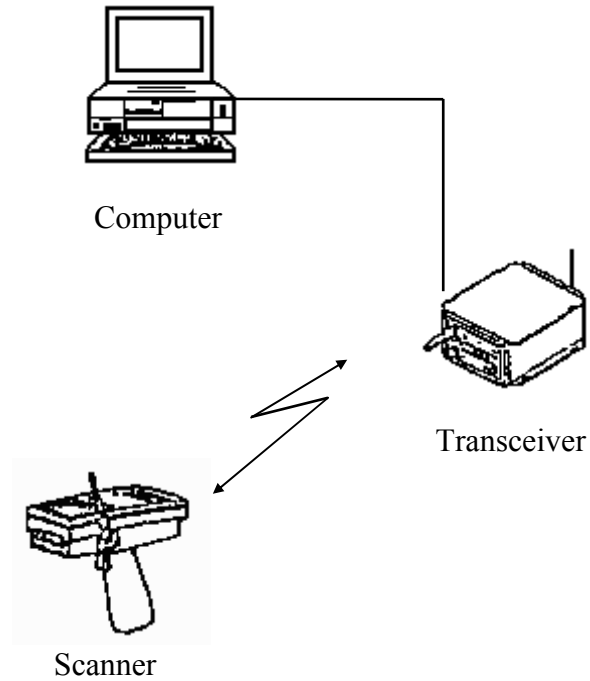
<b>21. REMARKS</b>  Item 10. IF Selectivity (230.4kpbs / 345kpbs)
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**ANTENNA EQUIPMENT CHARACTERISTICS**

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.

<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 (<i>X one</i>)</b> <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	