APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION

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DOD GENERAL INFORMATION

TO	FROM

1. APPLICATION TITLE

2. SYSTEM NOMENCLATURE

3. STAGE OF ALLOCATION *(X one)*
☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☐ d. STAGE 4 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
☐ a. SUPERSEDED J/F 12/
☐ b. RELATED J/F 12/

11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11?
☐ a. YES X b. NO ☐ 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	CLASSIFICATION	
N/A	UNCLASSIFIED	

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TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. MHX425 (400 to 450 MHz model)	**2. MANUFACTURER'S NAME** **Microhard Systems Inc.**
3. TRANSMITTER INSTALLATION	**4. TRANSMITTER TYPE** FM
5. TUNING RANGE 400 – 450 MHz	**6. METHOD OF TUNING** Synthesis PLL
7. RF CHANNELING CAPABILITY 400 – 450 MHz w/ <50 Hertz increments	**8. EMISSION DESIGNATOR(S)** FM Modulated 280kF1D
9. FREQUENCY TOLERANCE 1.5 PPM	
10. FILTER EMPLOYED *(X one)* **X a. YES** ☐ **b. NO**	
11. SPREAD SPECTRUM *(X one)* **X a. YES** ☐ **b. NO**	**12. EMISSION BANDWIDTH** *(X and complete as applicable)* ☐ **CALCULATED** **X MEASURED**
13. MAXIMUM BIT RATE 230.4 kbps	**a. -3 dB** 95 kHz **b. -20 dB** 280 kHz
14. MODULATION TECHNIQUES AND CODING **CPFSK**	**c. -40 dB** 750 kHz **d. -60 dB** 1400 kHz **e. OC-BW** 300 kHz
	15. MAXIMUM MODULATION FREQUENCY 116 kHz
16. PRE-EMPHASIS *(X one)* **X a. YES** ☐ **b. NO**	**17. DEVIATION RATIO** 1.25
	18. PULSE CHARACTERISTICS **N/A (frequency modulated)**
19. POWER	**a. RATE**
a. MEAN up to 1 Watt	**b. WIDTH**
b. PEP up to 1Watt	**c. RISE TIME**
20. OUTPUT DEVICE Transistor	**d. FALL TIME** **e. COMP RATIO**
	21. HARMONIC LEVEL
22. SPURIOUS LEVEL **-60 dBc**	**a. 2nd** **-60 dBc**
23. FCC TYPE ACCEPTANCE NO. **N/A**	**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 400 to 450 MHz

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RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. MHX425 (400 to 450 MHz model)	**2. MANUFACTURER'S NAME** Microhard Systems Inc.
3. RECEIVER INSTALLATION	**4. RECEIVER TYPE** Dual Conversion Superheterodyne
5. TUNING RANGE 400 – 450 MHz	**6. METHOD OF TUNING** Synthesis PLL
7. RF CHANNELING CAPABILITY 400 – 450 MHz w/ <50 Hertz increments	**8. EMISSION DESIGNATOR(S)** FM Modulated
9. FREQUENCY TOLERANCE 1.5 PPM	Receiver

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	

11. RF SELECTIVITY (X and complete as applicable)	
☐ **CALCULATED**	**X MEASURED**
a. -3 dB	100MHz
b. -20 dB	150 MHz
c. -60 dB	280 MHz
d. Preselection Type	Front end LC Filter

12. IF FREQUENCY	**13. MAXIMUM POST DETECTION FREQUENCY** 120 kHz
a. 1st 243.95MHz	**14. MINIMUM POST DETECTION FREQUENCY** N/A
b. 2nd 10.7MHz (Fast Rx)	**16. MAXIMUM BIT RATE** 230.4 kbps
c. 3rd	

15. OSCILLATOR TUNED	**1st**	**2nd**	**3rd**
a. ABOVE TUNED FREQUENCY	X	X	
b. BELOW TUNED FREQUENCY			
c. EITHER ABOVE OR BELOW THE FREQUENCY			

17. SENSITIVITY	
a. SENSITIVITY	**-105 dBm (230.4kbps)**
b. CRITERIA	**10^{-6} BER S/N = 12dB Typical**
c. NOISE FIG	< 3 dB
d. NOISE TEMP	N/A

18. DE-EMPHASIS *(X one)* **X a. YES** ☐ **b. NO**	**19. IMAGE REJECTION** **- 60 dBc**
20. SPURIOUS 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 400 to 450 MHz

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ANTENNA EQUIPMENT CHARACTERISTICS

1.
☐ a. TRANSMITTING ☐ b. RECEIVING ☐ c. TRANSMITTING AND RECEIVING

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.	3. MANUFACTURER'S NAME
4. FREQUENCY RANGE	5. TYPE
6. POLARIZATION	7. SCAN CHARACTERISTICS
	a. TYPE
8. GAIN	b. VERTICAL SCAN
a. MAIN BEAM	(1) Max Elev
b. 1st MAJOR SIDE LOBE	(2) Min Elev
	(3) Scan Rate
9. BEAMWIDTH	c. HORIZONTAL SCAN
a. HORIZONTAL	(1) Sector Scanned
b. VERTICAL	(2) Scan Rate
	d. SECTOR BLANKING *(X one)* ☐ (1) YES ☐ (2) NO

10. REMARKS

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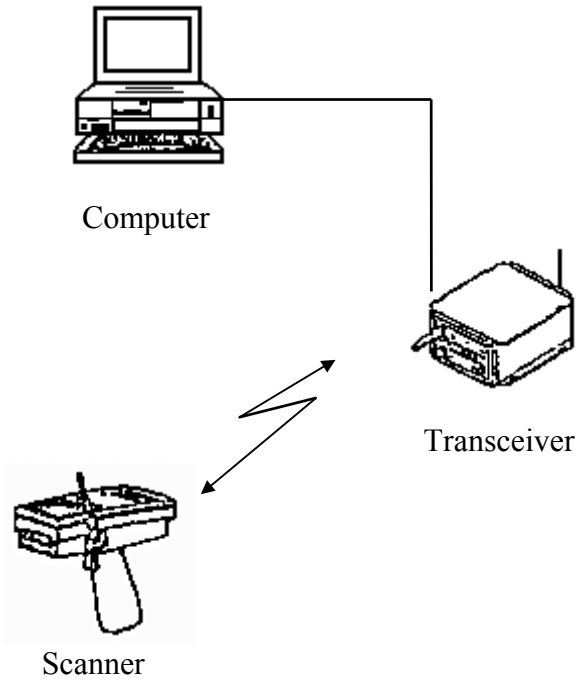
SAMPLE LINE DIAGRAM



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 *(X one)*

☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☐ d. STAGE 4 OPERATIONAL

4. FREQUENCY REQUIREMENTS

a. FREQUENCY(IES)

b. EMISSION DESIGNATOR(S)

5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (WARTIME USE) *(X one)* ☐ a. YES ☐ 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	CLASSIFICATION	
N/A	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 *(X one)*

☐ a. STAGE 1 CONCEPTUAL ☐ b. STAGE 2 EXPERIMENTAL ☐ c. STAGE 3 DEVELOPMENTAL ☐ 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	CLASSIFICATION	
N/A	UNCLASSIFIED	

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