APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION

CLASSIFICATION	DATE	FORM APPROVED
UNCLASSIFIED		OMB No. 0704-0188
		Page 1 of Pages

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	11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11?
☐ a. SUPERSEDED J/F 12/ ☐ b. RELATED J/F 12/	☐ a. YES **X** b. NO ☐ c. NAvail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) (Slow Mode)	**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 25kF1D
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 19.2 kbps	a. -3 dB	23kHz
	b. -20 dB	41kHz
14. MODULATION TECHNIQUES AND CODING CPFSK	c. -40 dB	90 kHz
	d. -60 dB	250 kHz
	e. OC-BW	23kHz

15. MAXIMUM MODULATION FREQUENCY	9.6 kHz

16. PRE-EMPHASIS *(X one)* **X a. YES** ☐ **b. NO**	**17. DEVIATION RATIO** +/- 10 kHz
	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

The –60dB emission bandwidth (12.e) reduced when the hardware is configured to only for the 19.2kbps receiver only. The number given in 12.e is for 19.2kbps mode on the dual receiver hardware configuration
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) (Slow Mode)	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	25 kHz	
b. -20 dB	590 kHz	45 kHz	
c. -60 dB	800 kHz	225 kHz	

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

12. IF FREQUENCY	d. Preselection Type Front end LC Filter
a. 1st 243.95MHz	13. MAXIMUM POST DETECTION FREQUENCY 10 kHz
b. 2nd 450kHz (Slow Rx)	14. MINIMUM POST DETECTION FREQUENCY N/A
c. 3rd	16. MAXIMUM BIT RATE 19.2 kbps

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 –114dBm (19.2kbps)	
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

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

Computer

Transceiver
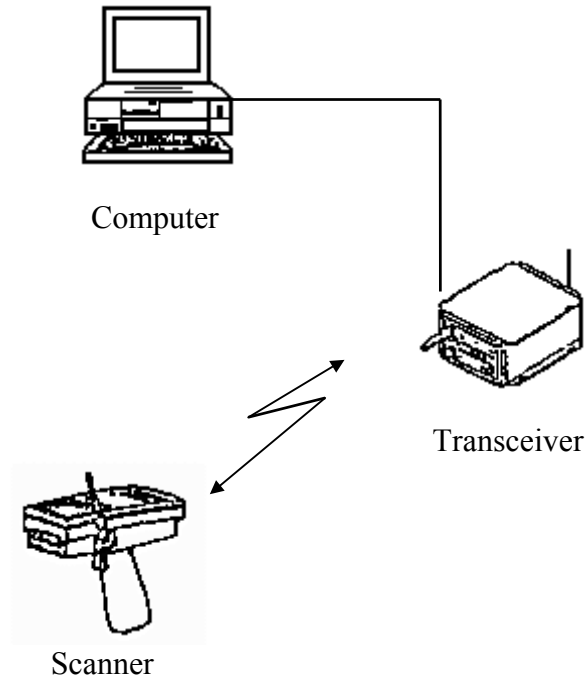
Scanner

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
   N/A
	CLASSIFICATION
	    UNCLASSIFIED	

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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 N/A	CLASSIFICATION UNCLASSIFIED	

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