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) 902 – 928 MHz
b. EMISSION DESIGNATOR(S) 350kF1D

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☐ a. SUPERSEDED J/F 12/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. 99021 MHX-910	**2. MANUFACTURER'S NAME** **Microhard Systems Inc.**
3. TRANSMITTER INSTALLATION	**4. TRANSMITTER TYPE** FM
5. TUNING RANGE 902 – 928 MHz	**6. METHOD OF TUNING** Synthesis PLL
7. RF CHANNELING CAPABILITY 902 – 928 MHz w/ 400 kHz increments	**8. EMISSION DESIGNATOR(S)** FM Modulated 350kF1D
9. FREQUENCY TOLERANCE < 3 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 ~ 175 kbps	**a. -3 dB** 210 kHz **b. -20 dB** 350 kHz
14. MODULATION TECHNIQUES AND CODING **CPFSK**	**c. -40 dB** 695 kHz **d. -60 dB** 1220 kHz **e. OC-BW** N/A Frequency Hopper
	15. MAXIMUM MODULATION FREQUENCY 87 kHz
16. PRE-EMPHASIS *(X one)* **X a. YES** ☐ **b. NO**	**17. DEVIATION RATIO** 2
	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 Advanced Gallium Arsenide HBT	**d. FALL TIME** **e. COMP RATIO**
	21. HARMONIC LEVEL
22. SPURIOUS LEVEL **60 dB**	**a. 2nd** **-27 dBm**
23. FCC TYPE ACCEPTANCE NO. **Part 15.247 Rules NS 901P5**	**b. 3rd** **-30 dBm** **c. OTHER**

24. 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

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RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. 99021 MHX-910	2. MANUFACTURER'S NAME Microhard Systems Inc.
3. RECEIVER INSTALLATION	4. RECEIVER TYPE FM
5. TUNING RANGE 902 – 928 MHz	6. METHOD OF TUNING Synthesis PLL
7. RF CHANNELING CAPABILITY 902 – 928 MHz w/ 400 kHz increments	8. EMISSION DESIGNATOR(S) FM Modulated
9. FREQUENCY TOLERANCE < 3 PPM	Receiver

10. IF SELECTIVITY	1st	2nd	3rd
a. -3 dB	1.15 MHz	280 kHz	
b. -20 dB	3.40 MHz	650 kHz	
c. -60 dB	<16.0 MHz	1.25 MHz	

11. RF SELECTIVITY (X and complete as applicable)	
☐ CALCULATED	X MEASURED
a. -3 dB	400 kHz
b. -20 dB	600 kHz
c. -60 dB	2.4 MHz

12. IF FREQUENCY	d. Preselection Type Front end LC Filter
a. 1st 110.6 MHz	13. MAXIMUM POST DETECTION FREQUENCY 87 kHz
b. 2nd 10.7 MHz	14. MINIMUM POST DETECTION FREQUENCY 58 kHz
c. 3rd	16. MAXIMUM BIT RATE 175 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	-105 dBm
b. CRITERIA	10^{-6} bit error rate
c. NOISE FIG	< 5dB
d. NOISE TEMP	- Kelvin

18. DE-EMPHASIS *(X one)* X a. YES ☐ b. NO	
19. IMAGE REJECTION - 50 dBc	20. SPURIOUS REJECTION > 60 dBc

21. REMARKS

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ANTENNA EQUIPMENT CHARACTERISTICS

1.

☐ **a. TRANSMITTING** ☐ **b. RECEIVING** ☒ **c. TRANSMITTING AND RECEIVING**

2. NOMENCLATURE, MANUFACTURER'S MODEL NO. KD14FREQ(914)	**3. MANUFACTURER'S NAME** Radiall - Larson
4. FREQUENCY RANGE 890 – 960 MHz	**5. TYPE** ¼ wave stub cut to 914 MHz
6. POLARIZATION Vertical	**7. SCAN CHARACTERISTICS** N/A
	a. TYPE
8. GAIN	**b. VERTICAL SCAN**
a. MAIN BEAM 2.15 dBi	**(1) Max Elev**
b. 1st MAJOR SIDE LOBE N/A	**(2) Min Elev**
	(3) Scan Rate
9. BEAMWIDTH	**c. HORIZONTAL SCAN**
a. HORIZONTAL 360 degrees	**(1) Sector Scanned**
b. VERTICAL 80 degrees	**(2) Scan Rate**
	d. SECTOR BLANKING *(X one)* ☐ **(1) YES** ☐ **(2) NO**

10. REMARKS

¼ wave stub used on aircraft side of ground to air datalink

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ANTENNA EQUIPMENT CHARACTERISTICS

1.

☐ **a. TRANSMITTING** ☐ **b. RECEIVING** ☒ **c. TRANSMITTING AND RECEIVING**

2. NOMENCLATURE, MANUFACTURER'S MODEL NO. MM5E900BNC	**3. MANUFACTURER'S NAME** Radiall - Larson
4. FREQUENCY RANGE 890 – 960 MHz	**5. TYPE** 5/8 over 5/8 over ¼ wave
6. POLARIZATION Vertical	**7. SCAN CHARACTERISTICS** N/A
	a. TYPE
8. GAIN	**b. VERTICAL SCAN**
a. MAIN BEAM 7.2 dBi	**(1) Max Elev**
b. 1st MAJOR SIDE LOBE N/A	**(2) Min Elev**
	(3) Scan Rate
9. BEAMWIDTH	**c. HORIZONTAL SCAN**
a. HORIZONTAL 360 degrees	**(1) Sector Scanned**
b. VERTICAL 60 degrees	**(2) Scan Rate**
	d. SECTOR BLANKING *(X one)* ☐ **(1) YES** ☐ **(2) NO**

10. REMARKS

ground station side of ground to air datalink.

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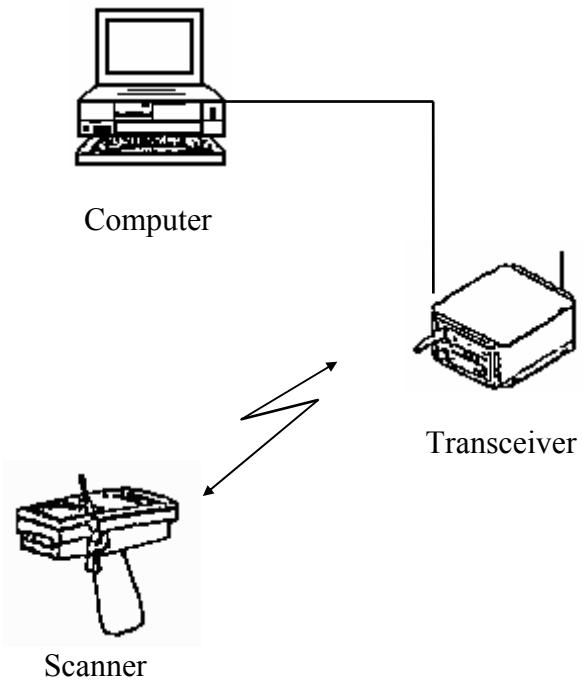
SAMPLE LINE DIAGRAM



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) 902 – 928 MHz

b. EMISSION DESIGNATOR(S) 350kF1D

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

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N/A	UNCLASSIFIED	

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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

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N/A	UNCLASSIFIED	

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