

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 a. SUPERSEDED J/F 12/ 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. IPnDDL2300	2. MANUFACTURER'S NAME Microhard Systems Inc.
3. TRANSMITTER INSTALLATION	4. TRANSMITTER TYPE COFDM
5. TUNING RANGE 2.304GHz to 2.359GHz	6. METHOD OF TUNING Synthesis PLL
7. RF CHANNELING CAPABILITY 1MHz step (4MHz and 8MHz Channels)	8. EMISSION DESIGNATOR(S) 5M7D1DEF 11M1D1DEF
9. FREQUENCY TOLERANCE 2 ppm	
10. FILTER EMPLOYED (X one) <input checked="" type="checkbox"/> a. YES <input type="checkbox"/> b. NO	
11. SPREAD SPECTRUM (X one) <input type="checkbox"/> a. YES <input checked="" 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 18Mbps (RAW)	a. -3 dB 4.0MHz / 8MHz (Half / Full BW) b. -20 dB 4.3MHz / 8.48MHz c. -40 dB 5.2MHz / 9.7MHz d. -60 dB 14.5MHz / 25.0MHz e. OC-BW 4.2MHz / 8.38MHz
14. MODULATION TECHNIQUES AND CODING COFDM (QPSK/16QAM)	15. MAXIMUM MODULATION FREQUENCY N/A
16. PRE-EMPHASIS (X one) <input type="checkbox"/> a. YES <input checked="" type="checkbox"/> b. NO	17. DEVIATION RATIO N/A
19. POWER a. MEAN up to 1 Watt (optional higher power available 2W) b. PEP up to 1Watt	18. PULSE CHARACTERISTICS N/A a. RATE b. WIDTH c. RISE TIME d. FALL TIME e. COMP RATIO
20. OUTPUT DEVICE InGaP HBT	21. HARMONIC LEVEL a. 2nd -55 dBc b. 3rd -60 dBc c. OTHER
22. SPURIOUS LEVEL -60 dBc	23. FCC TYPE ACCEPTANCE NO. N/A

24. REMARKS

BOX 19. 2W order Option available for Government Users “-2W”

Microhard Systems Inc.
 #150 Country Hills Landing
 Calgary, AB, Canada
 T3K 5P3
 Phone: (403) 248-0028
 Fax: (403) 248-2762
 Attn: Hany Shenouda

RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. IPhDDL2300				2. MANUFACTURER'S NAME Microhard Systems Inc.			
3. RECEIVER INSTALLATION				4. RECEIVER TYPE Zero IF receiver			
5. TUNING RANGE 2.304GHz to 2.359GHz				6. METHOD OF TUNING Synthesis PLL			
7. RF CHANNELING CAPABILITY 1MHz step (4MHz and 8MHz Channels)				8. EMISSION DESIGNATOR(S) 5M7D1DEF 11M1D1DEF			
9. FREQUENCY TOLERANCE 2 ppm							
10. IF SELECTIVITY		1st	2 nd	11. RF SELECTIVITY (X and complete as applicable)			
a. -3 dB		+/- 4 MHz +/- 7MHz		<input type="checkbox"/> CALCULATED X MEASURED			
b. -20 dB		+/- 10MHz +/- 12MHz		a. -3 dB		75MHz	
c. -60 dB		+/- 21MHz +/- 26MHz (40dB)		b. -20 dB		120 MHz	
12. IF FREQUENCY				d. Preselection Type			
				SAW Bandpass Filter			
a. 1st Zero IF Receiver				13. MAXIMUM POST DETECTION FREQUENCY N/A			
b. 2nd				14. MINIMUM POST DETECTION FREQUENCY N/A			
c. 3rd				16. MAXIMUM BIT RATE 18Mbps			
15. OSCILLATOR TUNED		1 st	2nd	17. SENSITIVITY			
a. ABOVE TUNED FREQUENCY				a. SENSITIVITY -97 dBm @ 6Mbps			
b. BELOW TUNED FREQUENCY				b. CRITERIA <10% Packet Error Rate			
c. EITHER ABOVE OR BELOW THE FREQUENCY				c. NOISE FIG ≈ 3 dB			
18. DE-EMPHASIS (X one) <input type="checkbox"/> a. YES X b. NO				d. NOISE TEMP N/A			
19. IMAGE REJECTION N/A				20. SPURIOUS REJECTION > 70 dBc (Out of Band)			

21. REMARKS

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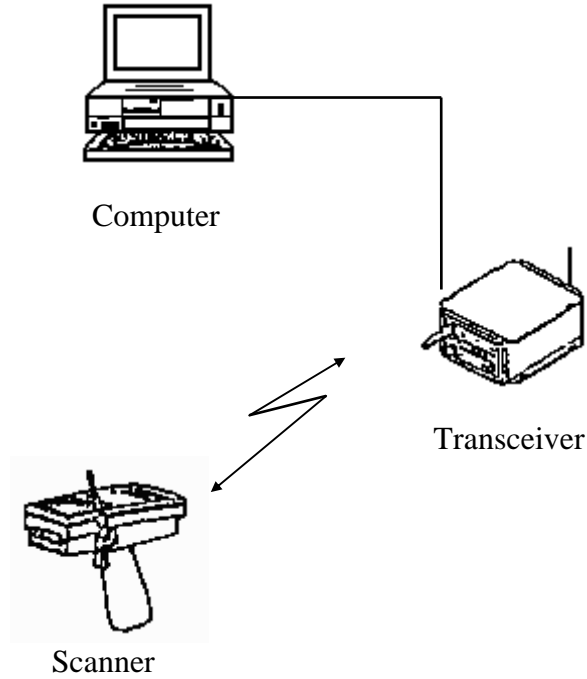
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ANTENNA EQUIPMENT CHARACTERISTICS

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	