SECURITY SUMMARY & SPECIAL HANDLING REQUIREMENTS

The Application Title is : RPS-42 UAS Detection Radar

The System Name is : RPS-42 Radar

The overall classification of this application is : **UNCLASSIFIED**

Refer to your Security Manual for further guidance.

The Application Level Special Handling is : F

Not releasable to foreign nationals and not releasable outside the US Government IAW Section 552 (b)(1) of Title 5 US Code.

DOWNGRADING INSTRUCTIONS

Special Handling Instruction : F

J/F 12/10810

CLASSIFICATION

UNCLASSIFIED

APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION	CLASSIFICATION UNCLASSIFIED	DATE 1/31/2014	J/F 12/10810
			PAGE 2

DOD GENERAL INFORMATION

TO (U) Defense Information Systems Agency
ATTN: Navy and Marine Corps Spectrum Center
P.O. Box 549
Ft. Meade, MD 20755-0549

FROM (U) Naval Surface Warfare Center Dahlgren Division
6149 Welsh Road, Suite 203
Dahlgren VA 22448-5130

1. APPLICATION TITLE (U) RPS-42 UAS Detection Radar

2. SYSTEM NOMENCLATURE (U) RPS-42 Radar

3. STAGE OF ALLOCATION (U) ☐ **a. STAGE 1 CONCEPTUAL** ☐ **b. STAGE 2 EXPERIMENTAL** ☐ **c. STAGE 3 DEVELOPMENTAL** ☒ **d. STAGE 4 OPERATIONAL**

4. FREQUENCY REQUIREMENTS
a. FREQUENCY(IES) (U) 3300.000 MHz - 3400.000 MHz
b. EMISSION DESIGNATORS

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 (U) United States & Possessions - Polygon

8. NUMBER OF UNITS

a. STAGE 2	b. STAGE 3	c. STAGE 4
	(U) 2	

9. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT (U) 2

10. OTHER J/F 12 APPLICATION ID(S) TO BE
☐ **a. SUPERSEDED**
☐ **b. RELATED**

11. IS THERE ANY OPERATIONAL REQUIREMENT AS DESCRIBED IN THE INSTRUCTIONS FOR PARAGRAPH 11?
☐ **a. YES** ☐ **b. NO** ☐ **c. NAVAIL**

12. NAMES AND TELEPHONE NUMBERS (See Data Overflow Page)

(U) PROGRAM MANAGER

13. REMARKS (U)
(U) Warning for Pulse Duty Cycle: the radar interleaves pulses of different pulse lengths and PRIs with in burst

DOWNGRADING INSTRUCTIONS

Special Handling Instruction : F

DOD DATA OVERFLOW PAGE

12. NAMES AND TELEPHONE NUMBERS

Cont. (U)

Ron Stapleton Comm: 540-653-2895 DSN: 249-2895

Cont. (U) PROJECT ENGINEER

Kurt Kral Comm: 540-653-5143 DSN: 249-5143

DOWNGRADING INSTRUCTIONS

Special Handling Instruction : F

J/F 12/10810

CLASSIFICATION

UNCLASSIFIED

FOREIGN COORDINATION GENERAL INFORMATION

1. APPLICATION TITLE (U) RPS-42 UAS Detection Radar

2. SYSTEM NOMENCLATURE (U) RPS-42 Radar

3. STAGE OF ALLOCATION (U) ☐ **a. STAGE 1 CONCEPTUAL** ☐ **b. STAGE 2 EXPERIMENTAL** ☐ **c. STAGE 3 DEVELOPMENTAL** ☒ **d. STAGE 4 OPERATIONAL**

4. FREQUENCY REQUIREMENTS

a. FREQUENCY(IES) (U) 3300.000 MHz - 3400.000 MHz

b. EMISSION DESIGNATORS

5. PROPOSED OPERATING LOCATIONS OUTSIDE US&P

(U) United States & Possessions

6. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS (See Data Overflow Page)

(U) The RPS-42 radar is a radiolocation system and will not be used for radio navigation. The RPS-42 UAS Detection Radar Stage 4 will not be used for separating aircraft (manned or unmanned). It is a solid state, phased array pulse Doppler radar. The radar system can incorporate up to four

7. INFORMATION TRANSFER REQUIREMENTS

(U) Software defined pulse-Doppler radar providing many combinations of wavefrom / PRF/PW/ integration interval.

8. NUMBER OF UNITS OPERATING SIMULTANEOUSLY IN THE SAME ENVIRONMENT (U) 2

9. REPLACEMENT INFORMATION

(U) Not Applicable

10. LINE DIAGRAM None

11. SPACE SYSTEMS

12. PROJECTED OPERATIONAL DEPLOYMENT DATE (U) 12/1/2017

13. REMARKS (U)

(U) Warning for Pulse Duty Cycle: the radar interleaves pulses of different pulse lengths and PRIs with in burst

DOWNGRADING INSTRUCTIONS

Special Handling Instruction : F

J/F 12/10810

CLASSIFICATION

UNCLASSIFIED

FOREIGN COORDINATION DATA OVERFLOW PAGE

6. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS

Cont. (U) independent and interchangeable radar panels, each covering 90 degrees in azimuth and 70 degrees in elevation. Hemispherical coverage is achieved by the simultaneous operation of four panels.

TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U) MHR Radar Transmitter

2. MANUFACTURER'S NAME
(U) RADA ELECTRONIC INDUSTRIES INC.

3. TRANSMITTER INSTALLATION
(U) Tripod or vehicle-mounted

4. TRANSMITTER TYPE
(U) Pulse Doppler Radar

5. TUNING RANGE
(U) 3300.000 - 3400.000 MHz

6. METHOD OF TUNING
(U) Digital Synthesizer

7. RF CHANNELING CAPABILITY
(U) 10.000 kHz Increments

8. EMISSION DESIGNATORS
(U) 11M0M1N (U) 14M7M1N (U) 17M6M1N (See Data Overflow Page)

9. FREQUENCY TOLERANCE
(U) 0.1 ppm

10. FILTER EMPLOYED
(U) LC Bandpass

11. SPREAD SPECTRUM
☐ a. YES ☒ b. NO

12. EMISSION BANDWIDTH

☒ CALCULATED ☐ MEASURED

a. -3 dB	(U) 4800 kHz	(U) 6400 kHz
b. -20 dB	(U) 11000 kHz	(U) 14700 kHz
c. -40 dB	(U) 21600 kHz	(U) 21600 kHz
d. -60 dB	(U) 68300 kHz	(U) 68300 kHz
e. OC-BW	(U) 11600 kHz	(U) 15400 kHz

13. MAXIMUM BIT RATE

14. MODULATION TECHNIQUES AND CODING
Coded Pulse Radar

15. MAXIMUM MODULATION FREQUENCY

16. PRE-EMPHASIS
☐ a. YES ☐ b. NO

17. DEVIATION RATIO

18. PULSE CHARACTERISTICS (See Data Overflow Page)

a. RATE	(U) 153000 pps	(U) 77000 pps
b. WIDTH	(U) 0.000650 ms	(U) 0.000130 ms
c. RISE TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
d. FALL TIME	(U) 0.0000400 ms	(U) 0.0000400 ms

19. POWER

a. MEAN

b. PEP (U) 328 W

c. CARRIER

e. COMP RATIO

20. OUTPUT DEVICE
(U) Field Effect Transistor

21. HARMONIC LEVEL

a.	(U) -70.0 dB
b.	(U) -70.0 dB
c.	(U) -70.0 dB

22. SPURIOUS LEVEL
(U) -70.0 dB

23. FCC TYPE ACCEPTANCE NO.
(U) NA

24. REMARKS (U)

(U) RF CHANNELING CAPABILITY: Any 10 channels can be programmed for use in field. The 10 kHz channel's center frequency separation is provided to allow avoidance of interfering signals.

(U) FILTER EMPLOYED: Filters employed are ceramic with inherent antenna bandwidth.

(U) EMISSION BANDWIDTH: Emission bandwidth shown indicates worst-case expected under SW control of pulse width. Pulse width is chosen based on expected target scenario. Pulse rise and fall times pertain to pulse edges and represent worst-case values.

TRANSMITTER DATA OVERFLOW PAGE

8. EMISSION DESIGNATORS

(U) 21M5M1N
(U) 3M70M1N
(U) 43M0M1N
(U) 4M40M1N
(U) 5M50M1N
(U) 7M30M1N
(U) 8M80M1N

12. EMISSION BANDWIDTH

-3.00 dB (U) 7700 kHz	-3.00 dB (U) 12800 kHz	-3.00 dB (U) 1600 kHz
-20.0 dB (U) 17600 kHz	-20.0 dB (U) 21500 kHz	-20.0 dB (U) 3700 kHz
-40.0 dB (U) 21600 kHz	-40.0 dB (U) 21600 kHz	-40.0 dB (U) 4400 kHz
-60.0 dB (U) 68300 kHz	-60.0 dB (U) 68300 kHz	-60.0 dB (U) 22000 kHz
Calculated	Calculated	Calculated
OC-BW (U) 18500 kHz	OC-BW (U) 22600 kHz	OC-BW (U) 3900.0 kHz
-3.00 dB (U) 19100 kHz	-3.00 dB (U) 1920 kHz	-3.00 dB (U) 2400 kHz
-20.0 dB (U) 43000 kHz	-20.0 dB (U) 4400 kHz	-20.0 dB (U) 5500 kHz
-40.0 dB (U) 43200 kHz	-40.0 dB (U) 5200 kHz	-40.0 dB (U) 6600 kHz
-60.0 dB (U) 68300 kHz	-60.0 dB (U) 25000 kHz	-60.0 dB (U) 30000 kHz
Calculated	Calculated	Calculated
OC-BW (U) 45200 kHz	OC-BW (U) 4600.0 kHz	OC-BW (U) 5800.0 kHz
-3.00 dB (U) 3200 kHz	-3.00 dB (U) 4000 kHz	
-20.0 dB (U) 7300 kHz	-20.0 dB (U) 8800 kHz	
-40.0 dB (U) 8800 kHz	-40.0 dB (U) 10400 kHz	
-60.0 dB (U) 36000 kHz	-60.0 dB (U) 32000 kHz	
Calculated	Calculated	
OC-BW (U) 7700.0 kHz	OC-BW (U) 9200.0 kHz	

18. PULSE CHARACTERISTICS

a. RATE	(U) 19200 pps	(U) 15400 pps
b. WIDTH	(U) 0.00520 ms	(U) 0.00650 ms
c. RISE TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
d. FALL TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
e. COMP RATIO		
a. RATE	(U) 12800 pps	(U) 61538 pps
b. WIDTH	(U) 0.00780 ms	(U) 0.00163 ms
c. RISE TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
d. FALL TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
e. COMP RATIO		
a. RATE	(U) 51000 pps	(U) 38000 pps
b. WIDTH	(U) 0.00195 ms	(U) 0.00260 ms
c. RISE TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
d. FALL TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
e. COMP RATIO		
a. RATE	(U) 30700 pps	(U) 25600 pps
b. WIDTH	(U) 0.00325 ms	(U) 0.00390 ms
c. RISE TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
d. FALL TIME	(U) 0.0000400 ms	(U) 0.0000400 ms
e. COMP RATIO		

TRANSMITTER DATA OVERFLOW PAGE

24. REMARKS

(U) MODULATION TECHNIQUES AND CODING: Transmission is bi-phase Barker Code modulated pulse. The shortest pulse uses a Barker code of length 2. The longest pulse a Barker code of length 13. Intermediate length Barker codes may also be used.

(U) Pulse Rate: each emission has a range of possible pulse repetition rates that vary from less a few thousand pps to a maximum of 160000 pps. These are specified for each emission designator.

RECEIVER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U) MHR Radar Receiver

2. MANUFACTURER'S NAME
(U) RADA ELECTRONIC INDUSTRIES INC.

3. RECEIVER INSTALLATION
(U) Tripod or vehicle-mounted

4. RECEIVER TYPE
(U) Superheterodyne Pulse Doppler Radar

5. TUNING RANGE
(U) 3300.000 - 3400.000 MHz

6. METHOD OF TUNING
(U) Digital Synthesizer

7. RF CHANNELING CAPABILITY
(U) 10.000 kHz Increments

8. EMISSION DESIGNATORS (See Data Overflow Page)
(U) 11M0M1N (U) 14M7M1N (U) 17M6M1N

9. FREQUENCY TOLERANCE
(U) 0.1 ppm

10. IF SELECTIVITY	1st (U)	2nd (U)	3rd (U)
(See Data Overflow Page) a. -3 dB	(U) 10000 kHz	(U) 5000 kHz	(U) 5000 kHz
b. -20 dB	(U) 30000 kHz	(U) 10000 kHz	(U) 10000 kHz
c. -60 dB	(U) 50000 kHz	(U) 20000 kHz	(U) 20000 kHz

11. RF SELECTIVITY
☐ CALCULATED ☒ MEASURED

a. -3 dB	(U) 600000 kHz
b. -20 dB	(U) 1600000 kHz
c. -60 dB	(U) 3200000 kHz

d. Preselection Type
(U) Bandpass filter

12. IF FREQUENCY

a. 1st	(U) 675.0000 MHz
b. 2nd	(U) 140.0000 MHz
c. 3rd	(U) 140.0000 MHz

13. MAXIMUM POST DETECTION FREQUENCY

14. MINIMUM POST DETECTION FREQUENCY

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

16. MAXIMUM BIT RATE

17. SENSITIVITY (See Data Overflow Page)

a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIG	(U) 3.00 dB
d. NOISE TEMP	(U) 289 K

18. DE-EMPHASIS
☐ a. YES ☐ b. NO

19. IMAGE REJECTION
(U) 80.0 dB

20. SPURIOUS REJECTION
(U) 80.0 dB

INTERMOD REJECTION : (U) 80.0 dB

21. REMARKS (U)

(U) RECEIVER INSTALLATION: Antenna assembly houses transmitter, receiver, and processor.

(U) RF CHANNELING CAPABILITY: Tuning resolution is 10 kHz (center frequency). Channel selection is simultaneous with the transmitter and is computer controlled.

(U) RF SELECTIVITY: Preselection is aided by the antenna selectivity.

RECEIVER DATA OVERFLOW PAGE

8. EMISSION DESIGNATORS

(U) 21M5M1N	(U) 3M70M1N	(U) 43M0M1N
(U) 4M40M1N	(U) 5M50M1N	(U) 7M30M1N
(U) 8M80M1N		

10. IF SELECTIVITY

3.00 dB (U) 10000 kHz	3.00 dB (U) 5000 kHz	3.00 dB (U) 10000 kHz
20.0 dB (U) 30000 kHz	20.0 dB (U) 10000 kHz	20.0 dB (U) 30000 kHz
60.0 dB (U) 50000 kHz	60.0 dB (U) 20000 kHz	60.0 dB (U) 50000 kHz
Measured	Measured	Measured
3.00 dB (U) 5000 kHz	3.00 dB (U) 10000 kHz	3.00 dB (U) 5000 kHz
20.0 dB (U) 10000 kHz	20.0 dB (U) 30000 kHz	20.0 dB (U) 10000 kHz
60.0 dB (U) 20000 kHz	60.0 dB (U) 50000 kHz	60.0 dB (U) 20000 kHz
Measured	Measured	Measured
3.00 dB (U) 10000 kHz	3.00 dB (U) 5000 kHz	3.00 dB (U) 10000 kHz
20.0 dB (U) 30000 kHz	20.0 dB (U) 10000 kHz	20.0 dB (U) 30000 kHz
60.0 dB (U) 50000 kHz	60.0 dB (U) 20000 kHz	60.0 dB (U) 50000 kHz
Measured	Measured	Measured
3.00 dB (U) 5000 kHz	3.00 dB (U) 10000 kHz	3.00 dB (U) 5000 kHz
20.0 dB (U) 10000 kHz	20.0 dB (U) 30000 kHz	20.0 dB (U) 10000 kHz
60.0 dB (U) 20000 kHz	60.0 dB (U) 50000 kHz	60.0 dB (U) 20000 kHz
Measured	Measured	Measured
3.00 dB (U) 10000 kHz	3.00 dB (U) 5000 kHz	3.00 dB (U) 10000 kHz
20.0 dB (U) 30000 kHz	20.0 dB (U) 10000 kHz	20.0 dB (U) 30000 kHz
60.0 dB (U) 50000 kHz	60.0 dB (U) 20000 kHz	60.0 dB (U) 50000 kHz
Measured	Measured	Measured
3.00 dB (U) 5000 kHz	3.00 dB (U) 10000 kHz	
20.0 dB (U) 10000 kHz	20.0 dB (U) 30000 kHz	
60.0 dB (U) 20000 kHz	60.0 dB (U) 50000 kHz	
Measured	Measured	

12. IF FREQUENCY

(U) 675.0000 MHz	(U) 140.0000 MHz	(U) 675.0000 MHz
(U) 140.0000 MHz	(U) 675.0000 MHz	(U) 140.0000 MHz
(U) 675.0000 MHz	(U) 140.0000 MHz	(U) 675.0000 MHz
(U) 140.0000 MHz	(U) 675.0000 MHz	(U) 140.0000 MHz
(U) 675.0000 MHz	(U) 140.0000 MHz	(U) 675.0000 MHz
(U) 140.0000 MHz	(U) 675.0000 MHz	

17. SENSITIVITY

a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K
a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K

RECEIVER DATA OVERFLOW PAGE

17. SENSITIVITY (continued)

a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K
a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K
a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K
a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K
a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K
a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) S/N - Signal to Noise Ratio (dB)
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K
a. SENSITIVITY	(U) -141 dBm
b. CRITERIA	(U) 13 (U) BER - Bit Error Rate
c. NOISE FIGURE	(U) 3.00 dB
d. NOISE TEMPERATURE	(U) 289 K

21. REMARKS

(U) OSCILLATOR TUNED: The local oscillator is 675 MHz below the operating frequency.

ANTENNA EQUIPMENT CHARACTERISTICS

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

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.
(U) MHR Radar Antenna

3. MANUFACTURER'S NAME
(U) RADA ELECTRONIC INDUSTRIES INC.

4. FREQUENCY RANGE
(U) 3300.000 - 3400.000 MHz

5. TYPE (U) Phased-array

6. POLARIZATION
(U) Vertical

7. SCAN CHARACTERISTICS

a. TYPE

b. VERTICAL SCAN (U) Electronic Scan Sector

(1) Max Elev (U) 75.0 degrees

(2) Min Elev (U) 0.000 degrees

(3) Scan Rate (U) 30.0 scans/min (U) 35.0 degrees/sec

c. HORIZONTAL SCAN

(1) Sector Scanned (U) 90.0 degrees

(2) Scan Rate

8. GAIN

a. MAIN BEAM
(U) 22.0 dBi

b. 1st MAJOR SIDE LOBE

9. BEAMWIDTH

a. HORIZONTAL
(U) 15.0 degrees

b. VERTICAL
(U) 15.0 degrees

d. SECTOR BLANKING ☐ (1) YES ☐ (2) NO

10. REMARKS (U)

(U) VERTICAL SCAN: Scan rate is nominal; scanning is pseudo-random in order and is affected by the radar processor sensing a target.
SECTOR BLANKING: Blanking can be set by computer during setup based upon the environment and target scenario.

(U) MAIN BEAM GAIN: Gain and beamwidths shown are at boresight direction. Exhibits cosine gain fall-off and beam broadening with off-boresight steering angle.

1st MAJOR SIDE LOBE: The first major sidelobe is -17 dB relative to the main beam.

NTIA GENERAL INFORMATION

1. APPLICATION TITLE (U) RPS-42 UAS Detection Radar

2. SYSTEM NOMENCLATURE (U) RPS-42 Radar

3. STAGE OF ALLOCATION (U) ☐ **a. STAGE 1 CONCEPTUAL** ☐ **b. STAGE 2 EXPERIMENTAL** ☐ **c. STAGE 3 DEVELOPMENTAL** ☒ **d. STAGE 4 OPERATIONAL**

4. FREQUENCY REQUIREMENTS

a. FREQUENCY(IES) (U) 3300.000 MHz - 3400.000 MHz

b. EMISSION DESIGNATORS

5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS **(WARTIME USE)** (U) ☐ **a. YES** ☒ **b. NO**

(U) The RPS-42 radar is a radiolocation system and will not be used for radio navigation. The RPS-42 UAS Detection Radar Stage 4 will not be used

(See Data Overflow Page)

6. INFORMATION TRANSFER REQUIREMENTS

(U) Software defined pulse-Doppler radar providing many combinations of wavefrom / PRF/PW/ integration interval.

7. ESTIMATED INITIAL COST OF THE SYSTEM (U) $ 600000

8. TARGET DATE FOR

a. APPLICATION APPROVAL	b. SYSTEM ACTIVATION	c. SYSTEM TERMINATION
(U) 9/1/2014	(U) 12/1/2017	(U) 3/1/2026

9. SYSTEM RELATIONSHIP AND ESSENTIALITY

(See Data Overflow Page)

(U) The RPS 42 radar is a radiolocation system composed of an active, electronically-steered array (AESA) antenna and a compact software-defined radar which together provide detection and

10. REPLACEMENT INFORMATION

(U) Not Applicable

11. RELATED ANALYSIS AND/OR TEST DATA

12. NUMBER OF UNITS (U) 25

13. GEOGRAPHICAL AREA FOR

a. STAGE 2

b. STAGE 3

c. STAGE 4 (U) United States & Possessions - Polygon

14. LINE DIAGRAM None

15. SPACE SYSTEMS

16. TYPES OF SERVICE(S) FOR STAGE 4

Radiodetermination

17. STATION CLASS(ES) FOR STAGE 4

MR

18. REMARKS

TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 7M30M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 8M80M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 11M0M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 14M7M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 17M6M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 3M70M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 4M40M1N

DOWNGRADING INSTRUCTIONS

Special Handling Instruction : F

J/F 12/10810

CLASSIFICATION

UNCLASSIFIED

NTIA GENERAL INFORMATION

TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 5M50M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 21M5M1N
TX (U) MHR Radar Transmitter, RX (U) MHR Radar Receiver, (U) 328 W Peak, (U) 3300.000 MHz - 3400.000 MHz (U) 43M0M1N

NTIA DATA OVERFLOW PAGE

5. PURPOSE OF SYSTEM, OPERATIONAL AND SYSTEM CONCEPTS

Cont. (U) for separating aircraft (manned or unmanned). It is a solid state, phased array pulse Doppler radar. The radar system can incorporate up to four independent and interchangeable radar panels, each covering 90 degrees in azimuth and 70 degrees in elevation. Hemispherical coverage is achieved by the simultaneous operation of four panels.

9. SYSTEM RELATIONSHIP AND ESSENTIALITY

Cont. (U) track of moving platforms. The radar system hands off target detection/track information to command and control and sensor management systems via an Ethernet interface.

FULL RECORD PRINT FOR RPS-42 RADAR

Application Title
(U) RPS-42 UAS Detection Radar

System Name (Nomenclature) (U) RPS-42 Radar	**Stage** (U) 4 - Operational
Coord. ID/Coord. Num. J/F 12/10810	**NTIA Certified** (U) No
Agency (U) N - Department of the Navy	**Date Of Import** 8/17/2017 9:55:04 PM (GMT)
Overall Security Unclassified	**Date/Time Last Mod.** 11/21/2017 11:02:32 PM (GMT)

GEOGRAPHIC AREAS FOR STAGE 4

(U) United States & Possessions
Location Type : (U) Polygon

Control Numbers:	**Predefined Trunking?** (U) No

REFERENCES

Type : Previous Certification
Ref. To Cert. : True
Ref. ID : 20418/3
Ref. Title : N - RPS-42 UAS Detection Radar - 3 - Unapproved - J/F 12
Ref. Org. : (U) N
Ref. Date : 9/19/2017
Ref. Is Class. : False

SYSTEM INFORMATION

System Description:
(U) The RPS-42 radar is a radiolocation system and will not be used for radio navigation. The RPS-42 UAS Detection Radar Stage 4 will not be used for separating aircraft (manned or unmanned). It is a solid state, phased array pulse Doppler radar. The radar system can incorporate up to four independent and interchangeable radar panels, each covering 90 degrees in azimuth and 70 degrees in elevation. Hemispherical coverage is achieved by the simultaneous operation of four panels.

System Relationship and Essentiality:
(U) The RPS 42 radar is a radiolocation system composed of an active, electronically-steered array (AESA) antenna and a compact software-defined radar which together provide detection and track of moving platforms. The radar system hands off target detection/track information to command and control and sensor management systems via an Ethernet interface.

ATTACHMENTS

File Name	SPS Number	Date of Attachment
(U) N_Req_RPS42 UAS Detection Radar_St 3.pdf		7/29/2014

FULL RECORD PRINT FOR RPS-42 RADAR

TARGET DATES

System Termination: (U) 3/1/2026 **System Activation:** (U) 12/1/2017 **System Approval:** (U) 9/1/2014

NSEP Use: (U) No	**ITU Waiver:** (U) No
Number Of Units: (U) 25	**National Coord. Required?** Yes
Num. Units in Same Environment: (U) 2	**Number Of Units Per Stage:** **Stage 3** (U) 2
Estimated Cost of the System: (U) $ 600000	

Replacement Information:
(U) Not Applicable

Remark(s) (U)
(U) Warning for Pulse Duty Cycle: the radar interleaves pulses of different pulse lengths and PRIs with in burst

STATIONS

Station Name : (U) RPS-42 Radar

Transmitters
Nomenclature : (U) MHR Radar Transmitter

Receivers
Nomenclature : (U) MHR Radar Receiver

Antennas
Nomenclature : (U) MHR Radar Antenna

Station Name : (U) Unmanned Aircraft System - Generic

TRANSMITTER EQUIPMENT CHARACTERISTICS

Nomenclature: (U) MHR Radar Transmitter	**Manufacturer:** (U) RADA ELECTRONIC INDUSTRIES INC.
NTIA Approval Status: (U) Unapproved	**Coordination ID:** J/F 12
Date of Import: 8/17/2017 9:55:04 PM (GMT)	**Date/Time Last Mod.:** 11/21/2017 11:02:32 PM (GMT)
Fcc Acc. Number: (U) NA	**Radar/Comm:** (U) Radar
Model Name: (U) MHR Radar Transmitter	**Output Device:** (U) Field Effect Transistor
Tuning Method: (U) Digital Synthesizer	**Supp. of Harmonics:** (U) Yes
Freq. Stability: (U) 0.1ppm	
Tx Type: (U) Pulse Doppler Radar	**Tx Installation(s)** (U) Tripod or vehicle-mounted
Filter Type (U) LC Bandpass	

POWER

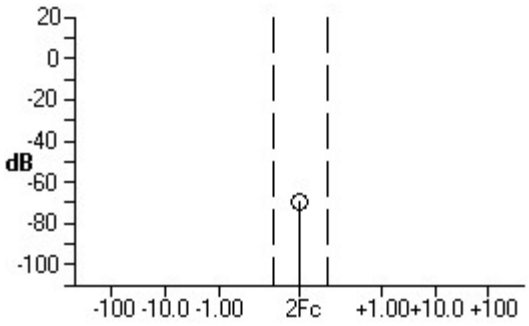
Power Type: Peak Envelope	
Upper Limit: (U) 328 W	

2ND HARMONIC CURVE

(UNCLASSIFIED)

Atten. -70.0 dB

Offset (Fo) 0.00000 kHz



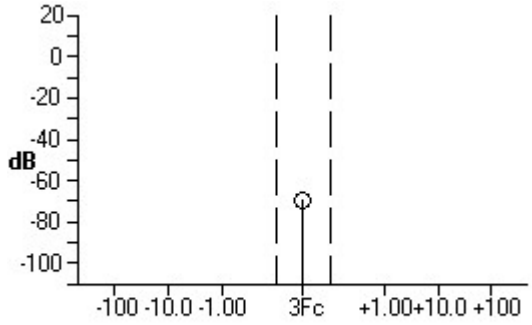
TRANSMITTER EQUIPMENT CHARACTERISTICS

3RD HARMONIC CURVE

(UNCLASSIFIED)

Atten. -70.0 dB

Offset (Fo) 0.00000 kHz

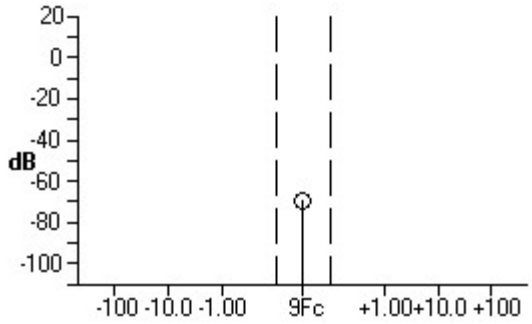


OTHER HARMONIC CURVE

(UNCLASSIFIED)

Atten. -70.0 dB

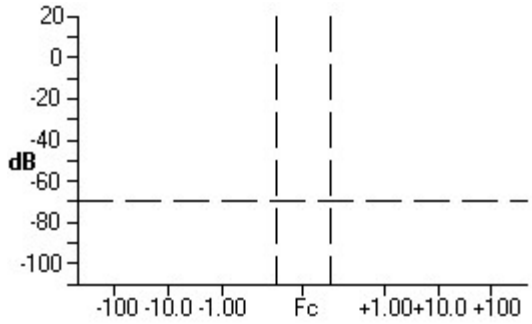
Offset (Fo) 0.00000 kHz



SPURIOUS EMISSION CURVE

(UNCLASSIFIED)

Maximum Spurious Emission
Atten.
-70.0 dB



TRANSMITTER EQUIPMENT CHARACTERISTICS

FREQUENCIES

Tuning Range: (U) 3300.000 MHz - 3400.000 MHz	**Tuning Method:** (U) Digital Synthesizer
Tuning Increment: (U) 10.000 kHz	**Freq Stability:** (U) 0.1ppm
Number of Frequencies Required: (U) 10000	**Min. Separation:** (U) 0.01000000 MHz
Supp. of Harmonics: (U) Yes	
Freq. Blocking Indicator: (U) No	

EMISSION DESIGNATORS

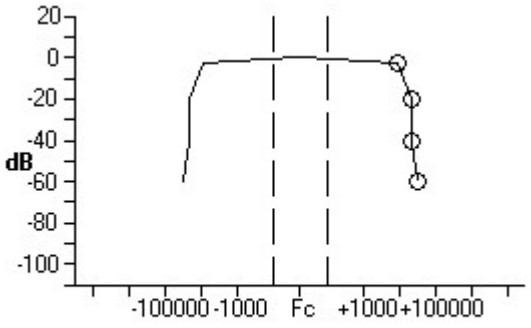
Em. Designator: (U) 43M0M1N	**Necessary BW:** (U) 43000 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 45200 kHz
Pulse Rep. Rate Lower Limit: (U) 39000 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.0000500 ms	**Pulse Duration Upper Limit:** (U) 0.000650 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	Offset (Fo)
-3.00 dB	9550.0 kHz
-20.0 dB	21500 kHz
-40.0 dB	21600 kHz
-60.0 dB	34150 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 153000 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.000650 ms

EMISSION DESIGNATORS

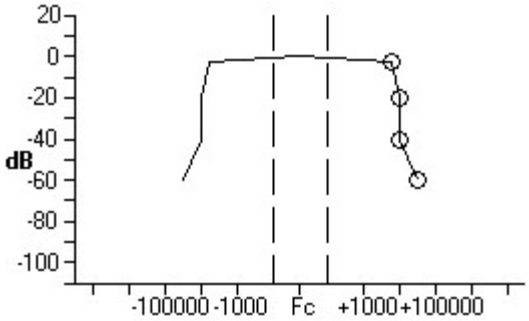
Em. Designator: (U) 21M5M1N	**Necessary BW:** (U) 21500 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 22600 kHz
Pulse Rep. Rate Lower Limit: (U) 19500 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000100 ms	**Pulse Duration Upper Limit:** (U) 0.00130 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	Offset (Fo)
-3.00 dB	6400.0 kHz
-20.0 dB	10750 kHz
-40.0 dB	10800 kHz
-60.0 dB	34150 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 77000 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.000130 ms

EMISSION DESIGNATORS

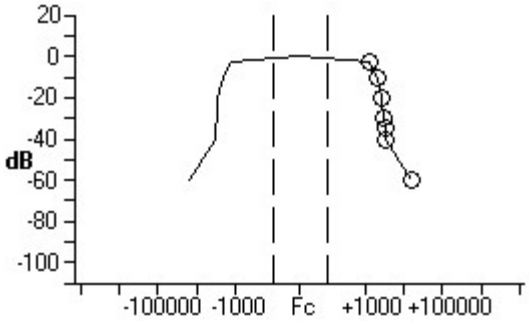
Em. Designator: (U) 5M50M1N	**Necessary BW:** (U) 5500.0 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 5800.0 kHz
Pulse Rep. Rate Lower Limit: (U) 4900 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000400 ms	**Pulse Duration Upper Limit:** (U) 0.00520 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	Offset (Fo)
-3.00 dB	1200.0 kHz
-10.0 dB	2100.0 kHz
-20.0 dB	2750.0 kHz
-30.0 dB	3000.0 kHz
-35.0 dB	3150.0 kHz
-40.0 dB	3300.0 kHz
-60.0 dB	15000 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 19200 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00520 ms

EMISSION DESIGNATORS

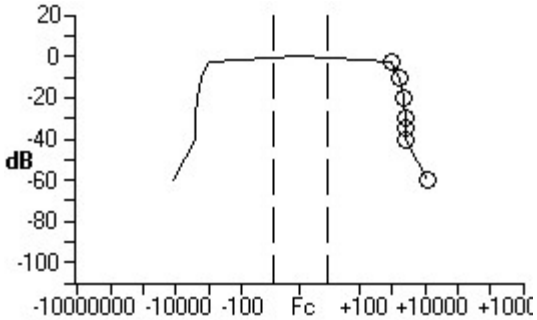
Em. Designator: (U) 4M40M1N	**Necessary BW:** (U) 4400.0 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 4600.0 kHz
Pulse Rep. Rate Lower Limit: (U) 3900 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000500 ms	**Pulse Duration Upper Limit:** (U) 0.00650 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	Offset (Fo)
-3.00 dB	960.00 kHz
-10.0 dB	1700.0 kHz
-20.0 dB	2200.0 kHz
-30.0 dB	2400.0 kHz
-35.0 dB	2500.0 kHz
-40.0 dB	2600.0 kHz
-60.0 dB	12500 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 15400 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00650 ms

EMISSION DESIGNATORS

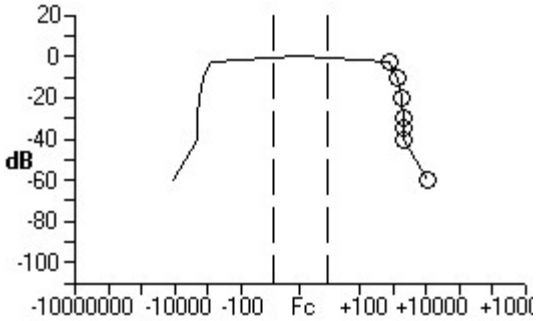
Em. Designator: (U) 3M70M1N	**Necessary BW:** (U) 3700.0 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 3900.0 kHz
Pulse Rep. Rate Lower Limit: (U) 3255 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000600 ms	**Pulse Duration Upper Limit:** (U) 0.00780 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	Offset (Fo)
-3.00 dB	800.00 kHz
-10.0 dB	1380.0 kHz
-20.0 dB	1850.0 kHz
-30.0 dB	2000.0 kHz
-35.0 dB	2100.0 kHz
-40.0 dB	2200.0 kHz
-60.0 dB	11000 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 12800 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00780 ms

EMISSION DESIGNATORS

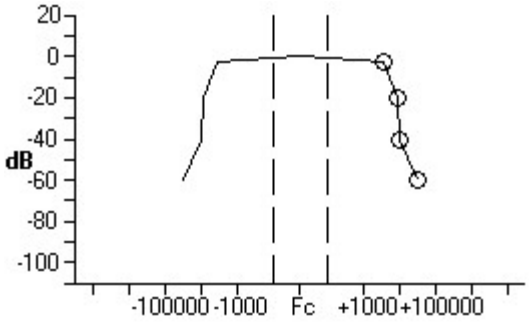
Em. Designator: (U) 17M6M1N	**Necessary BW:** (U) 17600 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 18500 kHz
Pulse Rep. Rate Lower Limit: (U) 15600 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000125 ms	**Pulse Duration Upper Limit:** (U) 0.00163 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	**Offset (Fo)**
-3.00 dB	3850.0 kHz
-20.0 dB	8800.0 kHz
-40.0 dB	10800 kHz
-60.0 dB	34150 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 61538 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00163 ms

EMISSION DESIGNATORS

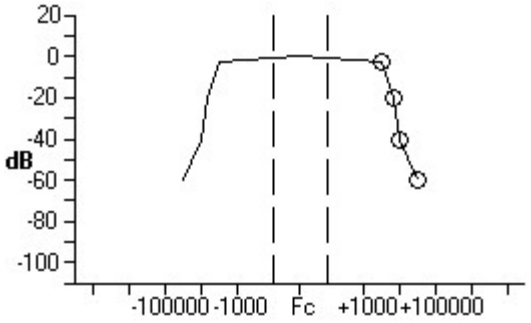
Em. Designator: (U) 14M7M1N	**Necessary BW:** (U) 14700 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 15400 kHz
Pulse Rep. Rate Lower Limit: (U) 13000 pps	**Pulse Rep. Rate Upper Limit:** (U) 16000 pps
Pulse Duration Lower Limit: (U) 0.000150 ms	**Pulse Duration Upper Limit:** (U) 0.00195 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	**Offset (Fo)**
-3.00 dB	3200.0 kHz
-20.0 dB	7350.0 kHz
-40.0 dB	10800 kHz
-60.0 dB	34150 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 51000 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00195 ms

EMISSION DESIGNATORS

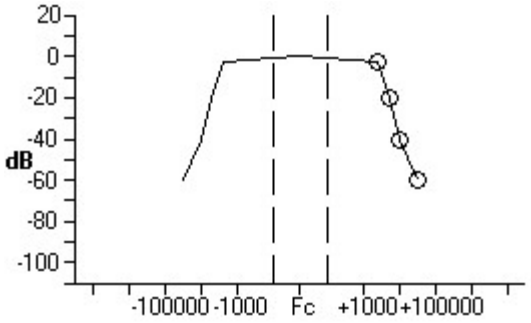
Em. Designator: (U) 11M0M1N	**Necessary BW:** (U) 11000 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 11600 kHz
Pulse Rep. Rate Lower Limit: (U) 9700 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000200 ms	**Pulse Duration Upper Limit:** (U) 0.00260 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	**Offset (Fo)**
-3.00 dB	2400.0 kHz
-20.0 dB	5500.0 kHz
-40.0 dB	10800 kHz
-60.0 dB	34150 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 38000 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00260 ms

EMISSION DESIGNATORS

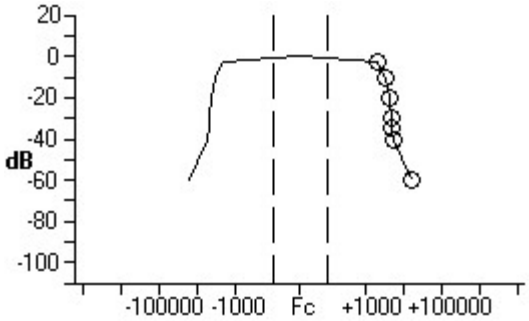
Em. Designator: (U) 8M80M1N	**Necessary BW:** (U) 8800.0 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 9200.0 kHz
Pulse Rep. Rate Lower Limit: (U) 7800 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000250 ms	**Pulse Duration Upper Limit:** (U) 0.00325 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	Offset (Fo)
-3.00 dB	2000.0 kHz
-10.0 dB	3300.0 kHz
-20.0 dB	4400.0 kHz
-30.0 dB	4800.0 kHz
-35.0 dB	5000.0 kHz
-40.0 dB	5200.0 kHz
-60.0 dB	16000 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 30700 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00325 ms

EMISSION DESIGNATORS

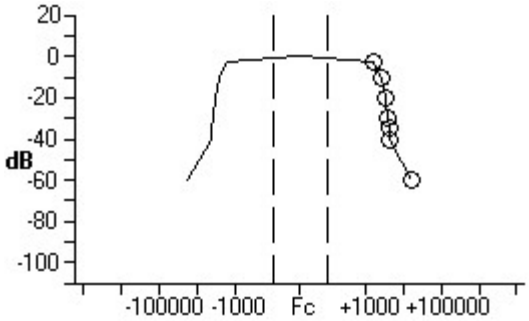
Em. Designator: (U) 7M30M1N	**Necessary BW:** (U) 7300.0 kHz
	Radar/Communications: (U) Radar
Measured/Calculated: (U) Calculated	**Occupied Bandwidth:** (U) 7700.0 kHz
Pulse Rep. Rate Lower Limit: (U) 6510 pps	**Pulse Rep. Rate Upper Limit:** (U) 160000 pps
Pulse Duration Lower Limit: (U) 0.000300 ms	**Pulse Duration Upper Limit:** (U) 0.00390 ms
	Spread Spectrum: No
	Radar Type: (U) Coded Pulse Radar

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Calculated

Level	Offset (Fo)
-3.00 dB	1600.0 kHz
-10.0 dB	2800.0 kHz
-20.0 dB	3650.0 kHz
-30.0 dB	4000.0 kHz
-35.0 dB	4200.0 kHz
-40.0 dB	4400.0 kHz
-60.0 dB	18000 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 25600 pps
Pulse Rise Time: (U) 0.0000400 ms
Pulse Fall Time: (U) 0.0000400 ms
Pulse Width: (U) 0.00390 ms

Remark(s) (U)

(U) MODULATION TECHNIQUES AND CODING: Transmission is bi-phase Barker Code modulated pulse. The shortest pulse uses a Barker code of length 2. The longest pulse a Barker code of length 13. Intermediate length Barker codes may also be used.

(U) RF CHANNELING CAPABILITY: Any 10 channels can be programmed for use in field. The 10 kHz channel's center frequency separation is provided to allow avoidance of interfering signals.

(U) FILTER EMPLOYED: Filters employed are ceramic with inherent antenna bandwidth.

(U) EMISSION BANDWIDTH: Emission bandwidth shown indicates worst-case expected under SW control of pulse width. Pulse width is chosen based on expected target scenario. Pulse rise and fall times pertain to pulse edges and represent worst-case values.

(U) Pulse Rate: each emission has a range of possible pulse repetition rates that vary from less a few thousand pps to a maximum of 160000 pps. These are specified for each emission designator.

RECEIVER EQUIPMENT CHARACTERISTICS

Nomenclature: (U) MHR Radar Receiver

Manufacturer: (U) RADA ELECTRONIC INDUSTRIES INC.

NTIA Approval Status: (U) Unapproved

Coordination ID: J/F 12

Date of Import: 8/17/2017 9:55:04 PM (GMT)

Date/Time Last Mod.: 10/2/2017 1:40:45 AM (GMT)

Model Name: (U) MHR Radar Receiver

Fcc Acc. Number: (U) NA

Image Reject: (U) 80.0 dB

Oscillator Tuned: (U) Below

Cond. Undesired Em.:

Proxy: No

Homodyne: No

RxType
(U) Superheterodyne Pulse Doppler Radar

Rx Installation(s)
(U) Tripod or vehicle-mounted

Preselection Type
(U) Bandpass filter

FREQUENCIES

Tuning Range: (U) 3300.000 MHz - 3400.000 MHz

Tuning Method: (U) Digital Synthesizer

Tuning Increment: (U) 10.000 kHz

Freq. Stability: (U) 0.1ppm

EMISSION DESIGNATORS

Em. Designator: (U) 43M0M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 43000 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

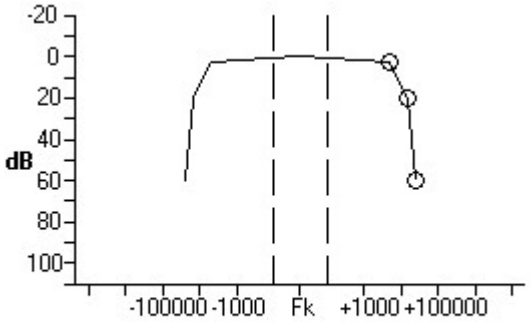
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



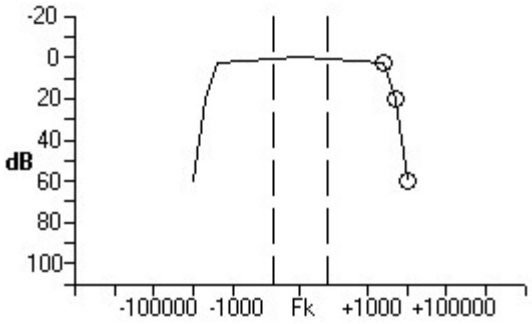
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 21M5M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 21500 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

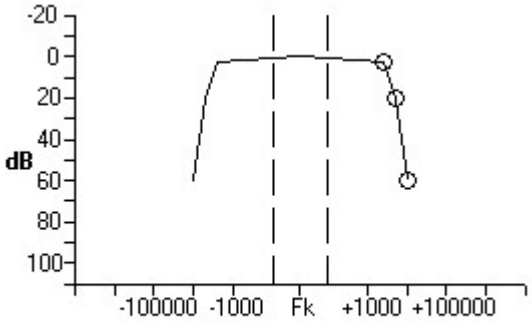
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



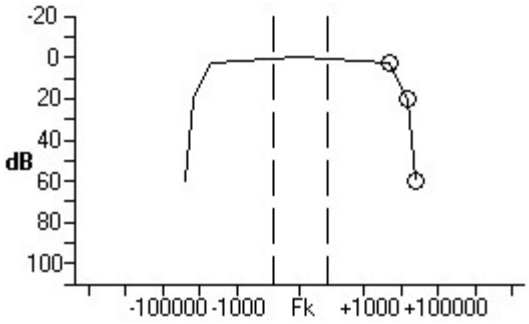
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 8M80M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 8800.0 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) BER - Bit Error Rate

RECEIVER EQUIPMENT CHARACTERISTICS

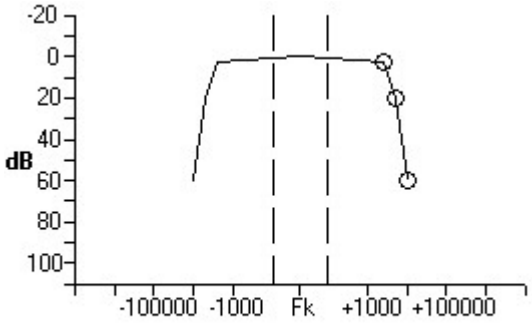
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



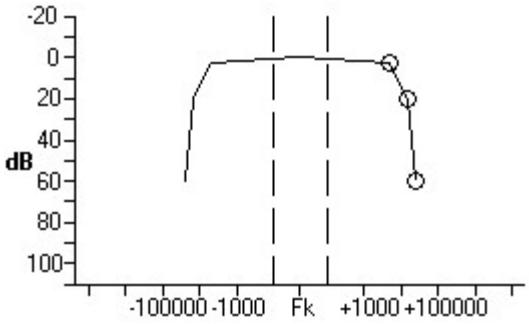
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 5M50M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 5500.0 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

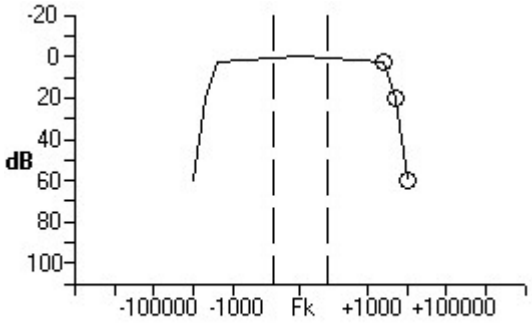
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



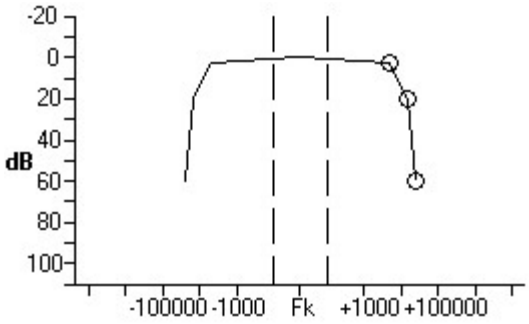
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 11M0M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 11000 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

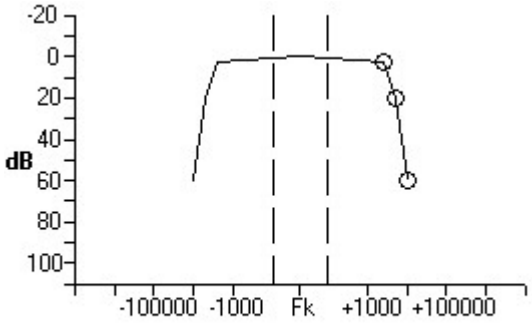
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



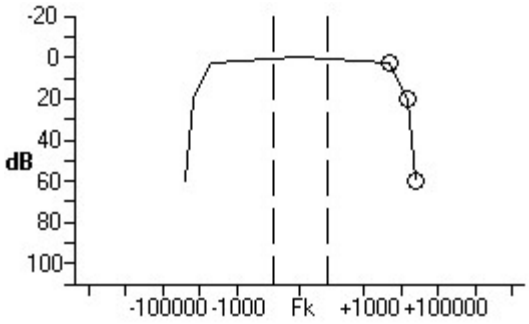
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 14M7M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 14700 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

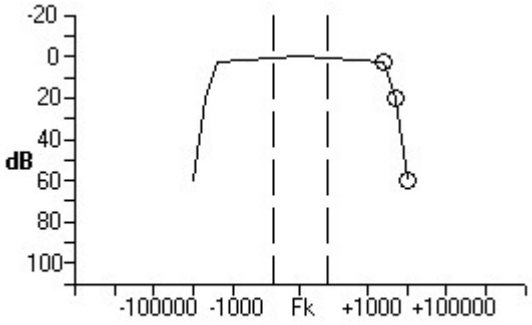
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



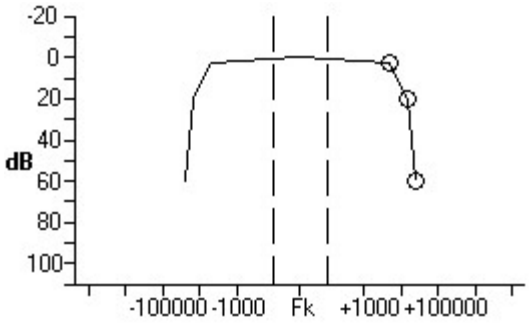
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 17M6M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 17600 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

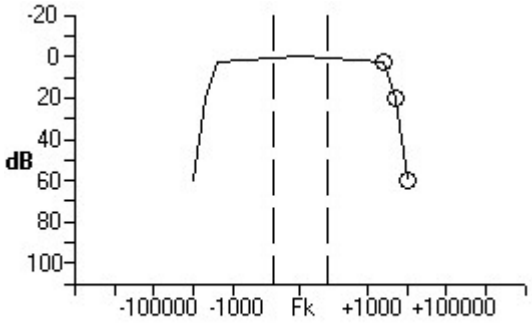
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



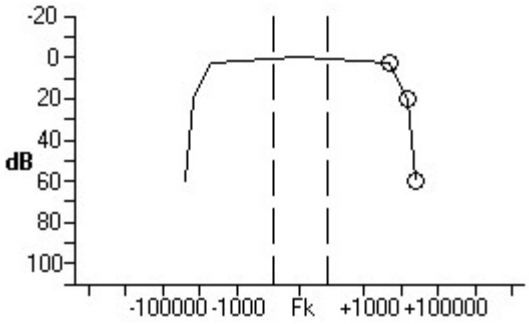
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 3M70M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 3700.0 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

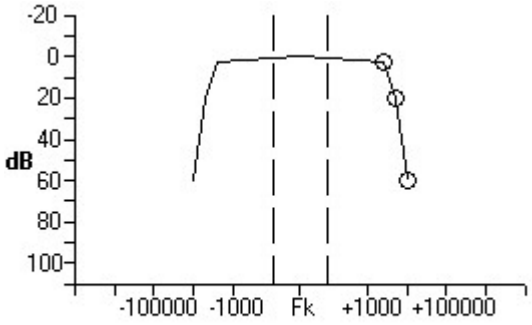
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



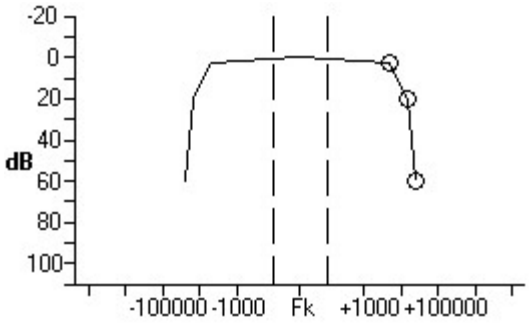
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 4M40M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 4400.0 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

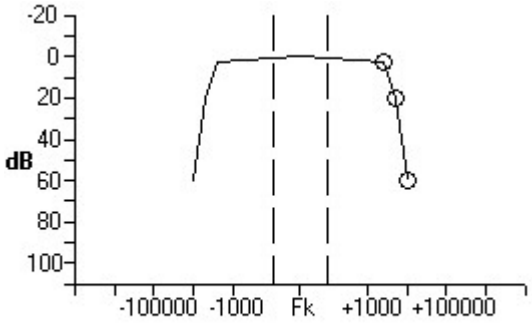
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



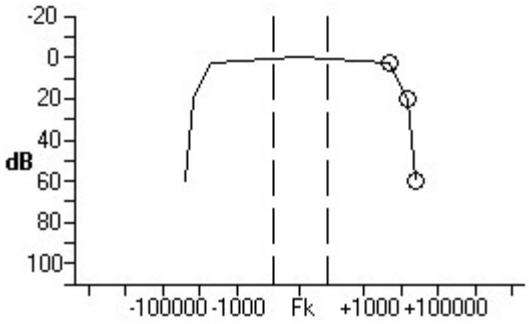
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 7M30M1N

Sensitivities

Sensitivity: (U) -141 dBm
Necessary BW: (U) 7300.0 kHz
Perf. Value: (U) 13
Noise Figure: (U) 3.00 dB
Noise Temp. (U) 289 K
Spur. Reject (U) 80.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

RECEIVER EQUIPMENT CHARACTERISTICS

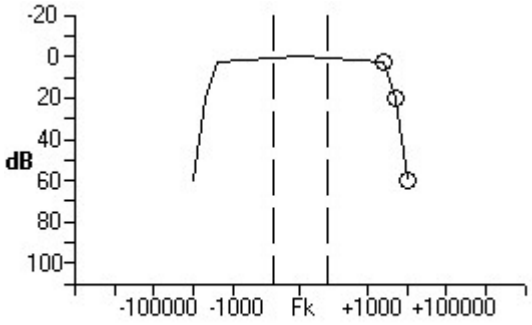
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 140.0000 MHz

Atten.	Offset (Fo)
3.00 dB	2500.0 kHz
20.0 dB	5000.0 kHz
60.0 dB	10000 kHz



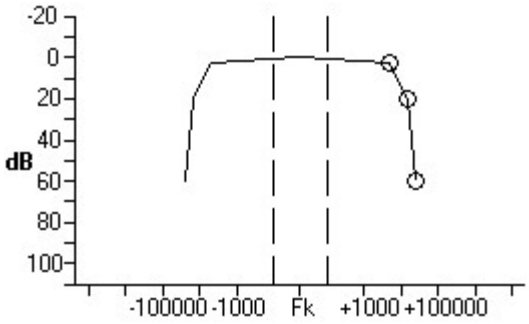
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 675.0000 MHz

Atten.	Offset (Fo)
3.00 dB	5000.0 kHz
20.0 dB	15000 kHz
60.0 dB	25000 kHz

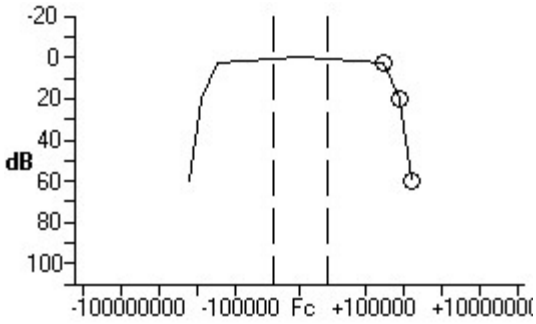


RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

Atten.	Offset (Fo)
3.00 dB	300000 kHz
20.0 dB	800000 kHz
60.0 dB	1600000 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

Remark(s) (U)

(U) RECEIVER INSTALLATION: Antenna assembly houses transmitter, receiver, and processor.

(U) RF CHANNELING CAPABILITY: Tuning resolution is 10 kHz (center frequency). Channel selection is simultaneous with the transmitter and is computer controlled.

(U) RF SELECTIVITY: Preselection is aided by the antenna selectivity.

(U) OSCILLATOR TUNED: The local oscillator is 675 MHz below the operating frequency.

ANTENNA EQUIPMENT CHARACTERISTICS

Nomenclature: (U) MHR Radar Antenna	**Manufacturer:** (U) RADA ELECTRONIC INDUSTRIES INC.
NTIA Approval Status: (U) Unapproved	**Coordination ID:** J/F 12
Date of Import: 8/17/2017 9:55:04 PM (GMT)	**Date/Time Last Mod.:** 10/2/2017 1:40:11 AM (GMT)
Model Name: (U) MHR Radar Antenna	**Antenna Type:** (U) Phased-array
Antenna Category: Phased Array	

FREQUENCIES

Lower Frequency Limit: (U) 3300.000 MHz
Upper Frequency Limit: (U) 3400.000 MHz

ANTENNA CHARACTERISTICS

Polarization: (U) Vertical	**Atten. Rel/Act:**
Vert. Min. Elev.: (U) 0.000 degrees	**Vert. Max. Elev.:** (U) 75.0 degrees
Num. Main Beam:	**Num. Elements:** (U) 109

BEAMWIDTH

Horizontal: (U) 15.0 degrees	**Vertical:** (U) 15.0 degrees

SCAN CHARACTERISTICS

Vertical Scan Type: (U) Electronic Scan Sector	**Vertical Scan Rate:** (U) 30.0 /min
	Vertical Scan Speed: (U) 35.0 /sec

GAIN

Main Beam: (U) 22.0 dBi	
Degrees of Scan: (U) 90.0 degrees	

Remark(s) (U)

(U) VERTICAL SCAN: Scan rate is nominal; scanning is pseudo-random in order and is affected by the radar processor sensing a target.
SECTOR BLANKING: Blanking can be set by computer during setup based upon the environment and target scenario.

ANTENNA EQUIPMENT CHARACTERISTICS

Cont.

(U) MAIN BEAM GAIN: Gain and beamwidths shown are at boresight direction. Exhibits cosine gain fall-off and beam broadening with off-boresight steering angle.

1st MAJOR SIDE LOBE: The first major sidelobe is -17 dB relative to the main beam.

COMPLIANCE CHECK REPORT

System Name: (U) RPS-42 Radar

NTIA General NTIA-Gen-0036, Page: 16
Severity: WARNING
Description:
This Unapproved Location does not have a Map Layer, i.e., it is not displayed on the map. To add it to the map, right-click on the [Location] node and choose "Display/Edit on Map". On the map screen, pick a suitable layer in the Location Layer combo box in the upper right corner and click OK.

Transmitter (U) MHR Radar Transmitter

NTIA General NTIA-Gen-0029, Page: 18
Severity: WARNING
Description:
The Manufacturer is not listed in the pre-defined manufacturer table. Make sure this is a valid new manufacturer and not a variation of an existing manufacturer or a mis-spelling before sending this Certification to NTIA.

Receiver: (U) MHR Radar Receiver

NTIA General NTIA-Gen-0030, Page: 31
Severity: WARNING
Description:
The Manufacturer is not listed in the pre-defined manufacturer table. Make sure this is a valid new manufacturer and not a variation of an existing manufacturer or a mis-spelling before sending this Certification to NTIA.

Antenna: (U) MHR Radar Antenna

NTIA General NTIA-Gen-0033, Page: 43
Severity: WARNING
Description:
The Manufacturer is not listed in the pre-defined manufacturer table. Make sure this is a valid new manufacturer and not a variation of an existing manufacturer or a mis-spelling before sending this Certification to NTIA.

Table of Contents For

(U) RPS-42 Radar