

UNCLASSIFIED	
SECURITY SUMMARY & SPECIAL HANDLING REQUIREMENTS	
<p>The title of this application is : FEATHAR X-BAND RADAR</p> <p>The overall classification of this application is : UNCLASSIFIED</p>	
<p>Refer to your Security Manual for further guidance.</p>	
<p>The Application Level Special Handling is : A</p> <p>Approved for public release; distribution is unlimited (DoD Directive 5230.24)</p>	
DOWNGRADING INSTRUCTIONS	
<p>Special Handling Instruction : A</p>	
CLASSIFICATION	UNCLASSIFIED

FULL RECORD PRINT FOR FEATHAR X-Band Radar

Selected Frequencies

(U) 9500.0 MHz - (U) 10000 MHz

System Name : (U) FEATHAR X-Band Radar
(Nomenclature)
Coord.ID/JF12 Num. : (U)/(U) J/F 12/09803
Stage : (U) 2 - Experimental
Agency : (U) N - Department of the Navy
NTIA Certified : (U) No
Overall Security : Unclassified

Date/Time Last Mod. : 6/2/2010 3:16:11 PM (GMT)
System Description : (U) Developmental testing and use of a system to produce synthetic aperture radar imagery of ground targets at X-band frequencies. Stage 4 system is intended to have a wartime function.

Target Date(s)

System Approval : (U) 3/1/2010
System Activation : (U) 3/1/2010
System Termination : (U) 12/31/2030

NSEP Use : (U) Yes
ITU Waiver : (U) No

Control Numbers

SPS- 17468/1

Source Documents

- (U) SPS - 17468/1 FEATHAR X-Band Radar Certification Application 6/2/2010

Geographic Areas for Stage 2

City, State/Country : (U) Yuma Proving Ground, (U) AZ
Location Type : (U) Polygon of 98 points

City, State/Country : (U) Bogue Field, (U) NC
Location Type : (U) Polygon of 12 points

City, State/Country : (U) Cherry Point Marine Corps Air , (U) NC
Location Type : (U) Polygon of 95 points

City, State/Country : (U) Cherry Point US Military Range, (U) NC
Location Type : (U) Polygon of 93 points

City, State/Country : (U) Hill Air Force Base, (U) UT
Location Type : (U) Polygon of 14 points

City, State/Country : (U) Hill Air Force Range, (U) UT
Location Type : (U) Polygon of 81 points

City, State/Country : (U) Camp LeJeune Marine Corps Base, (U) NC
Location Type : (U) Polygon of 360 points

Geographic Areas for Stage 3

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City, State/Country : (U) Yuma Proving Ground, (U) AZ
Location Type : (U) Polygon of 98 points

City, State/Country : (U) Bogue Field, (U) NC
Location Type : (U) Polygon of 12 points

City, State/Country : (U) Cherry Point Marine Corps Air , (U) NC
Location Type : (U) Polygon of 95 points

City, State/Country : (U) Cherry Point US Military Range, (U) NC
Location Type : (U) Polygon of 93 points

City, State/Country : (U) Camp LeJeune Marine Corps Base, (U) NC
Location Type : (U) Polygon of 360 points

City, State/Country : (U) Hill Air Force Base, (U) UT
Location Type : (U) Polygon of 14 points

City, State/Country : (U) Hill Air Force Range, (U) UT
Location Type : (U) Polygon of 81 points

Geographic Areas for Stage 4

City, State/Country : (U) Afghanistan
Location Type : (U) Polygon of 708 points

City, State/Country : (U) Yuma Proving Ground, (U) AZ
Location Type : (U) Polygon of 98 points

City, State/Country : (U) Hill Air Force Base, (U) UT
Location Type : (U) Polygon of 14 points

City, State/Country : (U) Hill Air Force Range, (U) UT
Location Type : (U) Polygon of 81 points

City, State/Country : (U) Camp LeJeune Marine Corps Base, (U) NC
Location Type : (U) Polygon of 360 points

City, State/Country : (U) Cherry Point Marine Corps Air , (U) NC
Location Type : (U) Polygon of 95 points

City, State/Country : (U) Cherry Point US Military Range, (U) NC
Location Type : (U) Polygon of 93 points

Number Of Units : (U) 2

Estimated Initial Cost of the System : (U) \$3500000

Information Transfer Requirement

(U) FEATHAR X-band radar does not transmit data and does not require data transmission for operation. FEATHAR X-band data to be stored onboard radar receiver equipment and made available for datalink via an air-ground communications capability.

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System Essentiality

(U) Naval Research Laboratory is developing the FEATHAR X-band radar to satisfy unique DoD Operational Requirements. This radar is currently being developed for flight testing at the Utah Test and Training Range (UTTR), UT, Yuma Proving Grounds (YPG), AZ and Camp Lejuene, NC area for eventual use OCONUS.

Replacement Information

(U) None

Stations

Station Name : (U) Airborne Radar

Transmitters

(U) Aetthercomm PN 60138-001

Receivers

(U) ARTEMIS PN 120039x

Antennas

(U) NRL experimental horn

Station Name : (U) Ground - Generic

Links - Selected Modes**Link****Transmitting Station**

(U) Airborne Radar

Receiving Station

(U) Ground

Radio Service : Radiodetermination

Station Class : MR

Equipment Combination

Transmitter : (U) Aetthercomm PN 60138-001

Tx Antenna : (U) NRL experimental horn

Receiver : (U) ARTEMIS PN 120039x

Rx Antenna : (U) NRL experimental horn

Selected Modes**Frequency**

(U) 9500.0 MHz - (U) 10000 MHz

Em. Des

(U) 480MQ3N

Power

Peak (U) 20.0 W

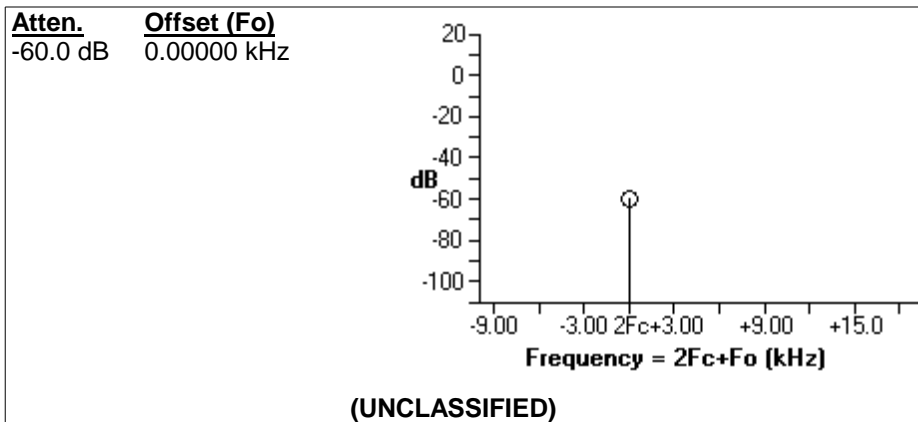
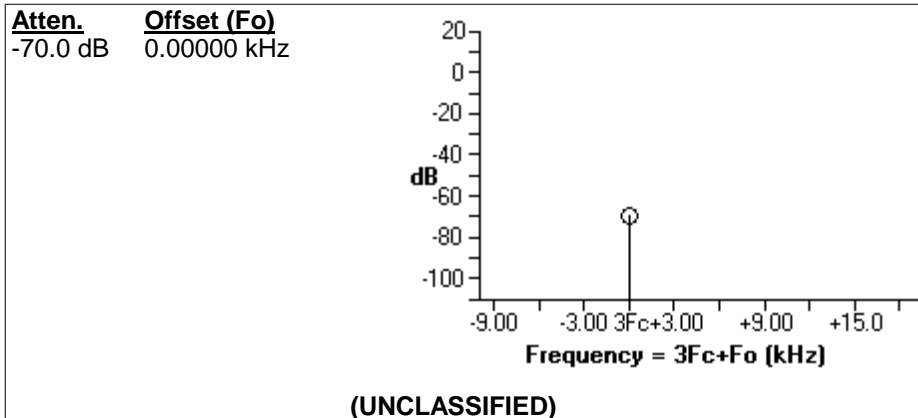
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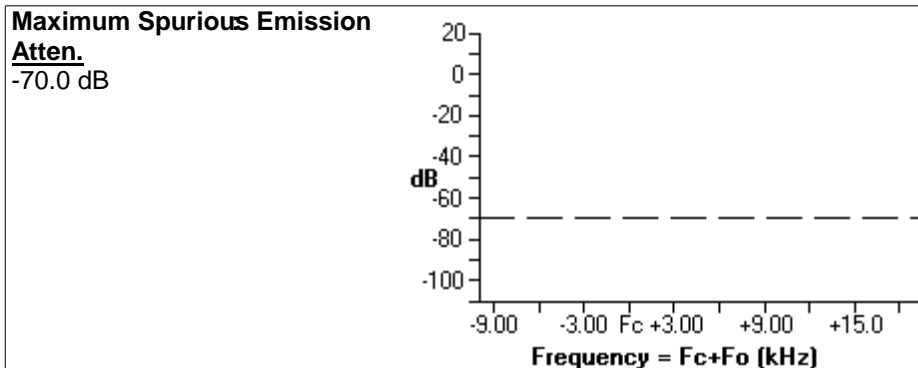
TRANSMITTER Aetthercomm PN 60138-001

Nomenclature : (U) Aetthercomm PN 60138-001
Manufacturer : (U) Aetthercomm
Model Name : (U) 60138-001
NTIA Approval Status : (U) Unapproved
Date/Time Last Mod. : 6/1/2010 8:20:44 PM (GMT)
Coordination ID : (U) J/F 12
Freq. Stability : (U) 40 ppm
Output Device : (U) Field Effect Transistor
Tuning Method : (U) Digital Synthesizer
Radar/Comm : (U) Radar
Supp. of Harmonics : (U) No

Figure 1 - 2nd Harmonic Curve (U)**Figure 2 - 3rd Harmonic Curve (U)**

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Figure 3 - Spurious Emission Curve (U)



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Frequencies

Tuned Frequency : (U) 9500.0 MHz - 10000 MHz

Tuning Increment : (U) 0.0010000 kHz

Freq Req. : (U) 1

Em. Designator : (U) 480MQ3N

Necessary BW : (U) 480000 kHz

Modulation - 480MQ3N

Occupied Bandwidth : (U) 480000 kHz

Measured/Calculated : (U) Calculated

Radar/Communications : (U) Radar

Radar Type : (U) FM Pulse Radar

Pulse Repetition Rate : (U) 16000 pps

Pulse Rise Time : (U) 0.00100 ms

Pulse Fall Time : (U) 0.00100 ms

Pulse Width : (U) 0.0100 ms

Pulse Duty Cycle : (U) 16.00 %

Pulse Freq. Deviation : (U) 480000 kHz

Radar Processing Gain : (U) 0.000 dB

Spread Spectrum : No

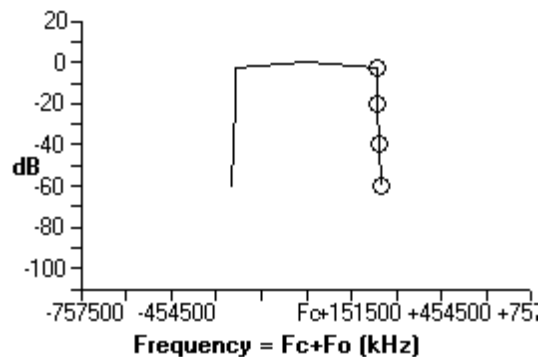
Pulse Width : (U) 0.0100

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Figure 4 - Fundamental Curve (U)

Meas/Calc : Calculated

Level	Offset (Fo)
-3.00 dB	240000 kHz
-20.0 dB	241500 kHz
-40.0 dB	245000 kHz
-60.0 dB	252500 kHz



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Powers

Power Type : Peak Envelope

Upper Limit : (U) 20.0 W

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RECEIVER ARTEMIS PN 120039x

Nomenclature : (U) ARTEMIS PN 120039x
Manufacturer : (U) ARTEMIS
Model Name : (U) 120039x
NTIA Approval Status : (U) Unapproved
Date/Time Last Mod. : 6/1/2010 9:43:08 PM (GMT)
Coordination ID : (U) J/F 12
Freq. Stability : (U) 17.5 ppm
Image Reject : (U) 50.0dB
Oscillator Tuned : (U) Below
Tuning Method : (U) Crystal Controlled

Frequencies

Tuned Frequency : (U) 9500.0 MHz - 100000 MHz

Tuning Increment : (U) 100.00 kHz

Sensitivities

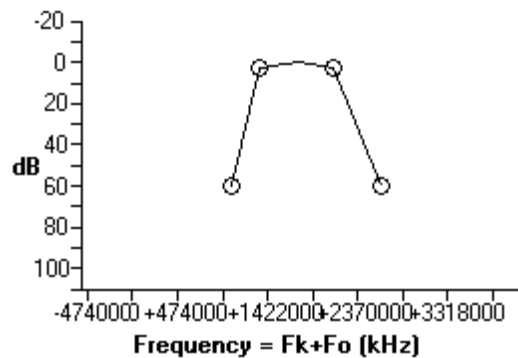
Em. Designator : (U) 480MQ3N
Necessary BW : (U) 480000 kHz
Perf. Crit. : (U) MDS - Minimum Discernable Signal (dB)
Perf. Value : (U) -30
Sensitivity : (U) -101 dBm
Noise Fig. : (U) 2.50 dB
Spur. Reject : (U) 0.000 dB

Figure 5 - IF Selectivity Curve (U)

IF Freq. (Fk) : 1750.0 MHz

Meas/Calc : Calculated

<u>Atten.</u>	<u>Offset (Fo)</u>
3.00 dB	-410000 kHz
3.00 dB	360000 kHz
60.0 dB	-710000 kHz
60.0 dB	870000 kHz



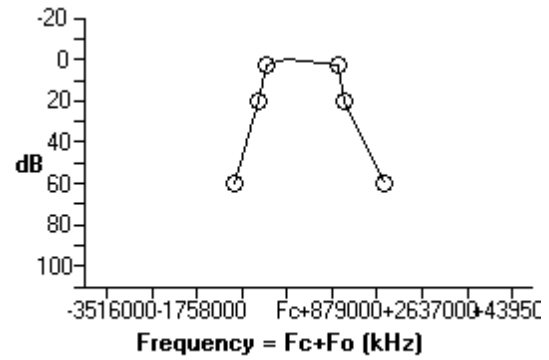
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Figure 6 - RF Selectivity Curve (U)

Meas/Calc : Calculated

Atten.	Offset (Fo)
3.00 dB	-410000 kHz
3.00 dB	1000000 kHz
20.0 dB	-550000 kHz
20.0 dB	1100000 kHz
60.0 dB	-1030000 kHz
60.0 dB	1900000 kHz



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ANTENNA NRL experimental horn

Nomenclature : (U) NRL experimental horn
Antenna Code : Linear
Manufacturer : (U) NAVAL RESEARCH LAB
NTIA Approval Status : (U) Unapproved
Date/Time Last Mod. : 1/13/2010 3:14:51 PM (GMT)
Coordination ID : (U) J/F 12
Lower Freq. Limit : (U) 9500.0 MHz
Upper Freq. Limit : (U) 10000 MHz
Polarization : (U) Vertical
Main Beam Gain : (U) 9.00 dBi
1st Horz. Sidelobe Atten. : (U) 15.0 dB
1st Vert. Sidelobe Atten. : (U) 15.0 dB
Atten. Rel/Act : (U) Relative dB
Horz. Beamwidth : (U) 80.0 degrees
Vert. Beamwidth : (U) 12.0 degrees

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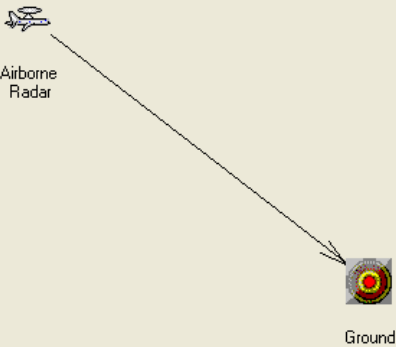
Frequency List

Tx Station	Rx Station	Frequency (MHz)	Em. Des.	Stn. Class
(U) Airborne Radar	(U) Ground	(U) 9500.0 - 10000	(U) 480MQ3N	MR

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Line Diagram: FEATHAR X-Band Radar



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