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ANTENNA EQUIPMENT CHARACTERISTICS

1. [ ] a. TRANSMITTING [ ] b. RECEIVING [X] c. TRANSMITTING AND RECEIVING

2. NOMENCLATURE, MANUFACTURER'S MODEL NO.	3. MANUFACTURER'S NAME
TCAS ANTENNA P/N 071-50001-8XXX	Sensor Systems, INC
4. FREQUENCY RANGE	**5. TYPE**
989 MHz – 1103 MHz	Four Element Directional Antenna
6. POLARIZATION	**7. SCAN CHARACTERISTICS**
Vertical	a. TYPE Electronic
8. GAIN	b. VERTICAL SCAN
a. MAIN BEAM	(1) MAX ELEV
3.6 dBi	35 deg
b. 1ST MAJOR SIDE LOBE	(2) MIN ELEV
-7.4 dBi @ 120 deg	-5 deg
	(3) SCAN RATE
	NA
9. BEAMWIDTH	c. HORIZONTAL SCAN
a. HORIZONTAL	(1) SECTOR SCANNED
85 degrees	360 degrees
b. VERTICAL	(2) SCAN RATE
45 degrees	60 scans per minute (one/sec)
	d. SECTOR BLANKING *(X one)*
	[ ] (1) YES [X] (2) NO

10. REMARKS

5. Dual 4- element antennas are used; one is on the top and one is on the bottom of the aircraft. The table below shows the ACAS II "Whisper-Shout" (WS) sequence steps and the antenna positioning during communication with the Mode C transponder.

SEQUENCE	ANTENNA	BEAM	HIGH DENSITY STEPS	POWER (dBm)	MED DENSITY STEPS	POWER (dBm)
1	Top	0 deg	1 - 24	30 - 52	1-6	32-52
2	Bottom	0 deg	25 - 34	30 - 39	N/A	
3	Top	90 deg	35 – 58	30 - 49	35-40	32-49
4	Bottom	90 deg	59 - 68	30 - 39	N/A	
5	Top	270 deg	69 - 92	30 - 49	69-74	32-49
6	Bottom	270 deg	93 - 102	30 - 39	N/A	
7	Top	180 deg	103 -126	30 –44	103-108	32-44
8	Bottom	180 deg	127 -136	30 – 39	N/A	

For Mode S Transponders: The system detects the squitters which are transmitted and transmits interrogations out of the antenna (and angle) the squitter was received from.

8a. Main beam gain is 3.6 dBi (TRANSMIT), 0 dBi (receive).
8b. 1st Major Side Lobe gain is –11 dB relative to the main beam gain and is located at plus/minus 120 degrees from the main beam.
9a. The phase control software used by the TCAS processor results in a beamwidth of 85 degrees (typical).
9b. The lowest elevation (3 dB point) is approximately – 5 degrees and the upper elevation (3dB point) is at +40 degrees.

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INSTRUCTIONS FOR COMPLETING DD FORM 1494,
"APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION"
ANTENNA EQUIPMENT CHARACTERISTICS PAGE

ITEM 1 - Function. Mark the appropriate block to indicate the type of function the antenna performs. For multi-antenna system, use one page for each antenna.

ITEM 2 - Nomenclature, Manufacturer's Model No. Enter the Government assigned alphanumeric equipment designation. If above is not available, enter the manufacturer's model number, e.g., DS6558, and complete Item 3. If above is not available, enter a short descriptive title, e.g., ATS-6 telemetry antenna.

ITEM 3 - Manufacturer's Name. Enter the manufacturer's name if available. If a manufacturer's model number is listed in Item 2, this item must be completed.

ITEM 4 - Frequency Range. Enter the range of frequencies for which the antenna is designed. Indicate units, e.g., kHz or MHz.

ITEM 5 - Type. Enter the generic name or describe general technical features, e.g., Horizontal Log Periodic, Cassegrain with Polarization Twisting, Whip, Phased Array or Conformal Array.

ITEM 6 - Polarization. Enter the polarization; if circular, indicate whether it is right or left hand.

ITEM 7 - Scan Characteristics.

a. If this antenna scans, enter the type of scanning, e.g., vertical, horizontal, vertical and horizontal.

b. (1) Enter the maximum elevation angle in degrees (positive or negative referenced to the horizontal) that the antenna can scan.

(2) Enter the minimum elevation angle in degrees (positive or negative referenced to the horizontal) that the antenna can scan.

(3) Enter the vertical scan rate in scans per minute.

c. (1) Enter the angular scanning range in scans per minute.

(2) Enter the horizontal scanning rate in scans per minute.

d. Indicate if antenna is capable of sector blanking. If yes, enter details in item 10, "Remarks."

ITEM 8 - Gain.

a. Enter the maximum gain in dBi.

b. Enter the nominal gain of the first major side lobe of the main beam in dBi and the angular displacement from the main beam in degrees.

ITEM 9 - Beamwidth. Enter the 3 dB beamwidth in degrees.

ITEM 10 - Remarks. Use this item to describe any unusual characteristics of the antenna, particularly as they relate to the assessment of electromagnetic compatibility. Use this item to amplify or clarify any of the information provided above.