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ESD-TR-77-310 ✓



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Report No. 131500-613 ✓
12 August 1977

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WIND TEST REPORT
FOR THE
AN/TRN-41 TACAN NAVIGATIONAL SET

12 10p.

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Reason: Test and Evaluation. 12 August 1977. Other
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Department of the Air Force, Headquarters Electronic
Systems Division (AFSC), Hanscom Air Force Base,
Massachusetts 01731, Attention: PPG.

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Department of the Air Force
Headquarters Electronic Systems Division (AFSC)
Hanscom Air Force Base
Massachusetts 01731

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ESD-TR-77-310	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
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18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) AN/TRN-41 TACAN NAVIGATIONAL SET		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Wind Test Report for the Navigational Set, TACAN, AN/TRN-41.		

WIND TEST REPORT
for the
NAVIGATIONAL SET, TACAN, AN/TRN-41

This report describes the wind test as defined in the Equipment Test Plan for Navigational Set, TACAN, AN/TRN-41, 131500-415.

1. **Test Identification.** Wind test as defined in Appendix IV-J (wind test procedure) of the Equipment Test Plan for Navigational Set, TACAN, AN/TRN-41.
2. **Functional Purpose of Test.** This test forms a part of the AN/TRN-41 system qualification tests.
3. **Test Objectives.** To demonstrate that the AN/TRN-41 will meet the wind requirements of paragraphs 3.2.5.1.9 and 4.2.1.4.3.10 of Specification No. 404L-701-5017A, Part 1 of 2 parts (20 August 1976).
4. **Description of Test Article.** The AN/TRN-41 system consisting of the following was used for the tests:

Receiver-Transmitter	RT-1202/T
Antenna	AS-3132/T
Antenna Support	AB-1237/T
Filter, DC Power	F-1439/T
Interconnecting Cables	
5. **Summary of Test Results.** The AN/TRN-41 showed no functional or physical degradation during the wind test.
6. **Description of Test Facilities and Procedures.** The test facilities and test procedures are described in Appendix IV-J of the Equipment Test Plan.
7. **Test Setup Diagrams.** The test setup diagrams are provided in Appendix IV-J of the Equipment Test Plan.

12. Certification. The data sheets shown in Attachment 2 have been signed by a Montek Quality Assurance representative and a DCAS representative, certifying that the test results are authentic, accurate, current and in accordance with the related test plan.

ACCESSION

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70-100 ☒

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70-100 ☐

100 Yr SOCIAL ☐
70-100 ☐

100 Yr OTHER ☐
70-100 ☐

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ATTACHMENT 1

TEST EQUIPMENT

TEST EQUIPMENT

<u>Description/Manufacturer</u>	<u>Model</u>	<u>Calibration Due Date</u>
Oscilloscope, Tektronix	465	7/6/77
Signal Generator, RF, H.P	612A	6/23/77
Peak Power Meter, Boonton S/N B-463	8900B	9/19/77
Pulse Generator, Data Pulse	110B	5/12/77
Counter, Fluke	1953	8/12/77
Half-Ampl. Det. Montek	131500-702	N/A
RF Detector, Montek	135203-100	N/A
Monitor Ant., Montek	006300	N/A
Test Box - Interconnection - Montek	131500-703	N/A
Power Supply HP	6274B	1/16/78
Power Supply Acopian		12/9/77
Power Supply, Sorensen	QR4075A	9/19/77
Directional Coupler 20 dB, Narda	3042B	N/A
Directional Coupler 10 dB, Microlab	CBA-78	N/A
Variable Attenuator, Weinschel 0-10 dB	CBA-78	N/A
Variable Attenuator, Weinschel 0-10 dB	905	N/A
RF Attenuator, Weinschel	10 dB	N/A
Multimeter, Fluke	8120A	8/2/77
Aircraft, Beachcraft	Bonanza	N/A
Velocity, Multimeter, Datameter	800TP	12/12/77

ATTACHMENT 2

DATA SHEETS

APPENDIX IV-K
DATA SHEET
ENVIRONMENTAL TEST

TEST Wind
SYSTEM 003

from 9 May 1977
DATE to 9 May 1977
ACCEPTABLE X
NOT ACCEPTABLE _____

REMARKS At the conclusion of the wind test, the system operated normally. There was no degradation in performance based on comparison of test data. No discrepancies were noted.

DISCREPANCIES

SIGN OFF INFORMATION

ENVIRONMENTAL TEST ENGINEER _____ **DATE** _____

REPRESENTATIVE ENGINEER BD Jackson DATE 5/11/77

QA REPRESENTATIVE W. B. Hunt DATE 5/11/77

DCASD OR AF CONCURRENCE Paul M. [Signature] DATE 3-11-77

June 30, 1976

DATA SHEET

OPERATIONAL TESTS

AN/TRN-41

Test WIND

System 003

Date 5/9/77

Time 2:00 PM

Tech

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with 5/9/77
with 5/9/77

Para. No.	Description	5/9/77 Pre Test m82	5/9/77 Post Test m82	Post Test	Requirements	Units
6.1	Calibrated RF insertion loss $P_L = 31.2$ dB Used in determining RF peak power.	N/A	N/A	N/A	N/A	N/A
6.2	System turn on normal operation	✓	✓		Check if OK	N/A
6.3.1	Antenna radiated signal 15 Hz	✓	✓		Check if OK	N/A
	135 Hz	✓	✓		Check if OK	N/A
6.3.2	Antenna Speed	66.667	66.668		66.667 ± .133	ms
6.4.1.1	Correct identity code	✓	✓		Check if OK	N/A
6.4.1.2	Identity period	38.0	38.0		37.5 ± 3.75	Seconds
6.4.2	Peak power (1) Reading of peak power meter $P_m =$ (2) Convert to dBm - 10 log $P_m \times 10^3 = P_m \text{ dBm}$ Total power output in dBm $P_{m \text{ dBm}} + P_L =$ *Insertion loss see 6.1 above.	76mw 18.81 dBm 50.01 dBm	76mw 18.81 dBm 50.01 dBm		N/A N/A 50 dBm	Watts dBm dB
6.4.3.3	Pulse count	7187	7189		7200 ± 180	Counts
6.4.4.2	Pulse shape Width (50%) Rise time (10-90%) Fall time (90-10%)	3.6µs 2.2µs 2.5µs	3.6µs 2.1µs 2.5µs		3.5 ± 0.5 2 ± 0.25 2.5 ± 0.5	µs µs µs
6.4.4.4	Pulse spacing	12.0µs	12.0µs		12.0 ± 0.1	µs
6.5.2	Delay - 60 ± 10 µs 15 Hz trig to first burst pulse.	✓	✓		Check if OK	

June 30, 1976

DATA SHEET
OPERATIONAL TESTS
AN/TRN-41 (Continued)

	Description	Pre Test	Test	Post Test	Requirements	Units
4.5.3	Correct north Burst - 12 pulse pairs spaced 30 ± 0.1 ps	✓	✓		Check if OK	
4.5.5	Delay 60 ± 10 ps - 135 Hz trig to first burst pulse	✓	✓		Check if OK	
4.5.6	Correct Aux burst - 6 pulse pairs spaced 24 ± 0.1 ps	✓	✓		Check if OK	
4.6.5	RT replies to 3000 interrogations	2508	2560		≥ 2310 (Counts/Second)	
4.6.7	Demand only mode - times to switch from ON to STBY within 70 seconds	✓	✓		Check if OK	✓
4.6.8	STBY mode	✓	✓		Check if OK	
4.6.9	Demand Only mode - time to switch from STBY to ON	✓	✓		Check if OK	
4.6.10	ON AIR mode	✓	✓		Check if OK	
4.7.1	DME ONLY mode	✓	✓		Check if OK	
4.7.2	Switch from DME to TACAN	✓	✓		Check if OK	
4.8.1	Antenna Alarm - Within four seconds	✓	✓		Check if OK	
4.8.2	Alarm Reset	✓	✓		Check if OK	
4.8.3	RT Alarm - Within five seconds	✓	✓		Check if OK	
4.8.4	Alarm Reset	✓	✓		Check if OK	

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