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NCS TIB 85-10



NATIONAL COMMUNICATIONS SYSTEM

AD-A164 437

VOLUME III

TEST DATA

ELECTROMAGNETIC PULSE TESTING
OF PROTECTION DEVICES

SECTION 6

EQUIPMENT AND DEVICES

BENCH CHECK MEASUREMENTS

DTIC FILE COPY

OCTOBER 1985

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| 19 ABSTRACT (Continue on reverse if necessary and identify by block number) | | | |
| <p>This technical report discusses the vulnerability of equipment used by amateur/MARS radio operators in the United States to disruption or damage by transient electromagnetic effects such as lightning, voltage surges, and electromagnetic pulse (EMP) waves. It also reports the results of two test programs; one to evaluate existing transient suppression devices and components, and one to evaluate the response of amateur radio equipment to an EMP transient environment.</p> <p>Based on the test results, the report recommends procedures and a low-cost installation scheme which will significantly increase the operational survivability of amateur type communications equipment in a lightning or EMP environment.</p> <p>This report consists of three volumes. Volume I (200 pages) contains the test results and recommendations for transient protection of amateur radio equipment. Volume II</p> | | | |
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Block 19 Continued - ABSTRACT

(136 pages) contains supporting documentation including: the test plans for the two EMP tests, descriptions/specifications of the tested transient suppression devices and the amateur radio equipment, and photographs of the test facilities and test set-ups. Volume III (1298 pages) contains the raw test data in the form of oscilloscope photographs attached to the test data sheets for both test programs, as well as, written test descriptions and bench check measurements from the equipment test program. For most purposes Volume I should provide sufficient information. Volume II would be required to obtain more detailed descriptions of the test programs and tested devices and equipment. Volume III would only be required if a separate analysis of the test data is being made.

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NCS TECHNICAL INFORMATION BULLETIN 85-10

ELECTROMAGNETIC PULSE/TRANSIENT THREAT TESTING OF PROTECTION
DEVICES FOR AMATEUR/MILITARY AFFILIATE RADIO SYSTEM EQUIPMENT

OCTOBER 1985

PROJECT OFFICER

DENNIS BODSON
Senior Electronics Engineer
Office of Technology
and Standards

: APPROVED FOR PUBLICATION:

Marshall L. Cain
for MARSHALL L. CAIN
Assistant Manager
Office of Technology
and Standards

FOREWORD

The National Communications System (NCS) is an organization of the Federal government whose membership is comprised of 22 Government entities. Its mission is to assist the President, National Security Council, Office of Science and Technology Policy, and Office of Management and Budget in:

- o The exercise of their wartime and non-wartime emergency functions, and their planning and oversight responsibilities.
- o The coordination of the planning for and provision of National Security/Emergency Preparedness communications for the Federal government under all circumstances including crisis or emergency.

In support of this mission the NCS has executed a Memorandum of Understanding with the American Radio Relay League. Its purpose is to establish a broad framework for a cooperative and close working relationship with volunteer radio amateurs for support of national emergency communications functions. It is intended through joint coordination and exercise of the resources of both organizations, to enhance the nation-wide posture of telecommunications readiness for any conceivable national emergency. This particular Technical Information Bulletin is one of a series aimed at developing an awareness in the radio amateur community of practical, low cost EMP protective procedures, devices, and equipment which may if utilized significantly enhance the probability of amateur radio resources escaping serious damage during emergency situations involving EMP events.

Comments, on this TIB are welcome, and should be addressed to:

Office of the Manager
National Communications System
ATTN: NCS-TS
Washington, DC 20305-2010
(202) 692-2124

TEST
PRE TEST

SYSTEM NUMBER
L

DATE
7-24-85

TRANSMITTER YAESU FT-757GX / FP-757-HD / FC-757 AT

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|-------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 1.8 | 102 | | | | ✓ |
| 3.8 | 100 | | | | ✓ |
| 7.3 | 104 | | | | ✓ |
| 10.3 | 107 | | | | ✓ |
| 14.3 | 106 | | | | ✓ |
| 18.3 | 106 | | | | ✓ |
| 21.3 | 104 | | | | ✓ |
| 24.8 | 101 | | | | ✓ |
| 28.3 | 94 | | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

A

L

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|-------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | 104 | | | | ✓ |
| 3.8 | 102 | | | | ✓ |
| 7.3 | 106 | | | | ✓ |
| 10.3 | 109 | | | | ✓ |
| 14.3 | 107 | | | | ✓ |
| 18.3 | 110 | | | | ✓ |
| 21.3 | 106 | | | | ✓ |
| 24.8 | 98 | | | | ✓ |
| 28.3 | 88 | | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

BL

L

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|-------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | 101 | | | | ✓ |
| 3.8 | 100 | | | | ✓ |
| 7.3 | 102 | | | | ✓ |
| 10.3 | 103 | | | | ✓ |
| 14.3 | 102 | | | | ✓ |
| 18.3 | 99 | | | | ✓ |
| 21.3 | 92 | | | | ✓ |
| 24.8 | 82 | | | | ✓ |
| 28.3 | 75 | | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

B2

L

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|---|---------------------------------------|-------------|---------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/O/IAT | W/IAT | W/O/IAT | |
| 1.8 | 103 | 103 | | | ✓ |
| 3.8 | 101 | 100 | | | ✓ |
| 7.3 | 104 | 105 | | | ✓ |
| 10.3 | 105 | 110 | | | ✓ |
| 14.3 | 104 | 110 | | | ✓ |
| 18.3 | 101 | 112 | | | ✓ |
| 21.3 | 93 | 112 | | | ✓ |
| 24.8 | 83 | 115 | | | ✓ |
| 28.3 | 75 | 112 | | | ✓ |
| | ANTENNA OUTPUT ON ANTENNA TUNER | ANTENNA OUTPUT ON TRANSCIVER | | | |

TEST SYSTEM NUMBER DATE
D2 L 8-2-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|-------------------|--------|-------------|--------|----------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 1.8 | 94 | | 95 | | ✓ |
| 3.8 | 95 | | 95 | | ✓ |
| 7.3 | 92 | | 89 | | ✓ |
| 10.3 | 95 | | 94 | | ✓ |
| 14.3 | 84 | | 80 | | ✓ |
| 18.3 | 83 | | 82 | | ✓ |
| 21.3 | 73 | | 74 | | ✓ |
| 24.8 | 80 | | 72 | | ✓ |
| 28.3 | 75 | | 68 | | ✓ |
| TUNER WORKS | OK | | | | |

TEST
F8+9

SYSTEM NUMBER
L

DATE
8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|--|-------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | * 96 | | 100 | 106 | ✓ |
| 3.8 | * 90 | | 98 | 102 | ✓ |
| 7.3 | 94 | | 92 | 102 | ✓ |
| 10.3 | * 89 | | 88 | 99 | ✓ |
| 14.3 | 68 | | * 92 | 98 | ✓ |
| 18.3 | * 65 | | * 97 | 101 | ✓ |
| 21.3 | 67 | | * 99 | 105 | ✓ |
| 24.8 | 70 | | * 94 | 108 | ✓ |
| 28.3 | 68 | | * 94 | 96 | ✓ |
| <p>AUTOMATIC PART OF ANTENNA TUNER IS NOT GOOD. A. TUNER TUNES MANUALLY - OK * MANUAL TUNING TO MAX. PWR. OUT.</p> | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
1

DATE
7-24-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -105 | |
| 3.8 | | -107.5 | |
| 7.3 | | -105 | |
| 10.3 | | -102.4 | |
| 14.3 | | -102.8 | |
| 18.3 | | -100.8 | |
| 21.3 | | -100.2 | |
| 24.8 | | -103 | |
| 28.3 | | -102.3 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

A

L

7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -107.9 | |
| 3.8 | | -107.9 | |
| 7.3 | | - 107 | |
| 10.3 | | -102.9 | |
| 14.3 | | - 102.9 | |
| 18.3 | | - 101.4 | |
| 21.3 | | - 101 | |
| 24.8 | | - 104 | |
| 28.3 | | - 104 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

BL

L

7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -106.9 | |
| 3.8 | | -107 | |
| 7.3 | | -106.9 | |
| 10.3 | | -103.3 | |
| 14.3 | | -102.9 | |
| 18.3 | | -102.3 | |
| 21.3 | | -102 | |
| 24.8 | | -104.6 | |
| 28.3 | | -104.2 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

B2

L

7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -106.5 | |
| 3.8 | | -107.0 | |
| 7.3 | | -107.0 | |
| 10.3 | | -102.9 | |
| 14.3 | | -102.9 | |
| 18.3 | | -102.0 | |
| 21.3 | | -101.8 | |
| 24.8 | | -104.1 | |
| 28.3 | | -104.1 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

D2

L

8.5.85

RECEIVER

SIGNAL LEVEL (dBm)

Signal Generator Level for S-5 on USB

FREQUENCY
(MHZ)

WITH DEVICE

WITHOUT DEVICE

1.8

103.8

103.5

3.8

104.8

7.3

104.3

104.2

10.3

100

14.3

100

18.3

100

99.5

21.3

99.1

24.8

101.4

28.3

101.9

101.9

THRU TUNER

THRU TUNER

TEST
F8/9

SYSTEM NUMBER
L

DATE
8.8.85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|--|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | 102.5 | | |
| 3.8 | 103 | | |
| 7.3 | 101 * | | |
| 10.3 | 98 | | |
| 14.3 | 98.5 | | |
| 18.3 | 98.7 | | |
| 21.3 | 99 | | |
| 24.8 | 100 | | |
| 28.3 | 97.3 | | |
| | WITH TUNER | | |
| | * TUNER LOSS -2dB THIS FREQ ONLY | | |

TEST
PRE TEST

SYSTEM NUMBER
2

DATE
7-24-85

TRANSMITTER YAESU FT-757GX / FP 757HD

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|-------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 107 | | | ✓ |
| 3.8 | | 104 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 112 | | | ✓ |
| 14.3 | | 115 | | | ✓ |
| 18.3 | | 119 | | | ✓ |
| 21.3 | | 119 | | | ✓ |
| 24.8 | | 120 | | | ✓ |
| 28.3 | | 116 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

A

2

7-30-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|-------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 107 | | | ✓ |
| 3.8 | | 105 | | | ✓ |
| 7.3 | | 111 | | | ✓ |
| 10.3 | | 115 | | | ✓ |
| 14.3 | | 118 | | | ✓ |
| 18.3 | | 118 | | | ✓ |
| 21.3 | | 119 | | | ✓ |
| 24.8 | | 121 | | | ✓ |
| 28.3 | | 121 | | | ✓ |
| | | | | | |

TEST
B2

SYSTEM NUMBER
2

DATE
7-30-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATIO |
|-----------------|-------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 107 | | | ✓ |
| 3.8 | | 105 | | | ✓ |
| 7.3 | | 112 | | | ✓ |
| 10.3 | | 116 | | | ✓ |
| 14.3 | | 119 | | | ✓ |
| 18.3 | | 120 | | | ✓ |
| 21.3 | | 120 | | | ✓ |
| 24.8 | | 123 | | | ✓ |
| 28.3 | | 122 | | | ✓ |
| | | | | | |

TEST
CL

SYSTEM NUMBER
2

DATE
7-31-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 107 | | | ✓ |
| 3.8 | | 105 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 112 | | | ✓ |
| 14.3 | | 112 | | | ✓ |
| 18.3 | | 115 | | | ✓ |
| 21.3 | | 115 | | | ✓ |
| 24.8 | | 115 | | | ✓ |
| 28.3 | | 109 | | | ✓ |
| | | | | | |

TEST
C2

SYSTEM NUMBER
2

DATE
7-31-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|------------------------------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 106 | | | ✓ |
| 3.8 | | 105 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 112 | | | ✓ |
| 14.3 | | 113 | | | ✓ |
| 18.3 | | 115 | | | ✓ |
| 21.3 | | 115 | | | ✓ |
| 24.8 | | 114 | | | ✓ |
| 28.3 | | 108 | | | ✓ |
| POWER-ON TEST WITH HONDA GENERATOR | | | | | |

TEST

SYSTEM NUMBER

DATE

C3

2

7-31-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 106 | | | ✓ |
| 3.8 | | 105 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 111 | | | ✓ |
| 14.3 | | 112 | | | ✓ |
| 18.3 | | 115 | | | ✓ |
| 21.3 | | 115 | | | ✓ |
| 24.8 | | 115 | | | ✓ |
| 28.3 | | 110 | | | ✓ |
| | | | | | |

TEST
C4

SYSTEM NUMBER
2

DATE
8-1-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 107 | | | ✓ |
| 3.8 | | 105 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 113 | | | ✓ |
| 14.3 | | 112 | | | ✓ |
| 18.3 | | 115 | | | ✓ |
| 21.3 | | 106 | | | ✓ |
| 24.8 | | 115 | | | ✓ |
| 28.3 | | 110 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

DL

2

8-2-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 107 | | 106 | ✓ |
| 3.8 | | 104 | | 104 | ✓ |
| 7.3 | | 110 | | 109 | ✓ |
| 10.3 | | 112 | | 112 | ✓ |
| 14.3 | | 112 | | 112 | ✓ |
| 18.3 | | 115 | | 113 | ✓ |
| 21.3 | | 115 | | 112 | ✓ |
| 24.8 | | 113 | | 110 | ✓ |
| 28.3 | | 106 | | 103 | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

D15 R+T

2

8-7-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|--|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 130 | | 130 | ✓ |
| 3.8 | | 117 | | 119 | ✓ |
| 7.3 | | 121 | | 122 | ✓ |
| 10.3 | | 125 | | 125 | ✓ |
| 14.3 | | 128 | | 126 | ✓ |
| 18.3 | | 135 | | 134 | ✓ |
| 21.3 | | 139 | | 135 | ✓ |
| 24.8 | | 140 | | 135 | ✓ |
| 28.3 | | 134 | | 125 | ✓ |
| AFTER TEST RECEIVER NOISE STAYED AT S-S LEVEL - | | | | | |

TEST
E1,2+3

SYSTEM NUMBER
2

DATE
8-7-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 107 | | | ✓ |
| 3.8 | | 105 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 112 | | | ✓ |
| 14.3 | | 115 | | | ✓ |
| 18.3 | | 119 | | | ✓ |
| 21.3 | | 120 | | | ✓ |
| 24.8 | | 121 | | | ✓ |
| 28.3 | | 125 | | | ✓ |
| | | | | | |

TEST
F1+2

SYSTEM NUMBER
2

DATE
8-7-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-------------------------|------------------------|---|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 185 | | | ✓ |
| 3.8 | | 225 | | | ✓ |
| 7.3 | | 210 | | | ✓ |
| 10.3 | | 210 | | | ✓ |
| 14.3 | | 210 | | | ✓ |
| 18.3 | | 195 | | | ✓ |
| 21.3 | | 185 | | | ✓ |
| 24.8 | | 165 | | | ✓ |
| 28.3 | | 160 | | | ✓ |
| TX RATED AT 100 WATTS - | | NO ANTENNA PROTECTION DURING PULSE TEST. | | | |

TEST
PRE TEST

SYSTEM NUMBER
2

DATE
7-24-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -109.2 | |
| 3.8 | | -111 | |
| 7.3 | | -109.2 | |
| 10.3 | | -103.4 | |
| 14.3 | | -106.8 | |
| 18.3 | | -105.7 | |
| 21.3 | | -104.1 | |
| 24.8 | | -108 | |
| 28.3 | | -107.5 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

A

2

7-30-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

1.8

-109

3.8

-110

7.3

-109.6

10.3

-103.5

14.3

-105.8

18.3

-104.2

21.3

-103.9

24.8

-107.4

28.3

-105.4

TEST

SYSTEM NUMBER

DATE

B2

2

7-30-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -105.8 | |
| 3.8 | | -106.6 | |
| 7.3 | | -106.2 | |
| 10.3 | | -102 | |
| 14.3 | | -102.8 | |
| 18.3 | | -101 | |
| 21.3 | | -97.5 | |
| 24.8 | | -102 | |
| 28.3 | | -100 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

CL

2

7-31-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -105.9 | |
| 3.8 | | -105.9 | |
| 7.3 | | -105.3 | |
| 10.3 | | -101.9 | |
| 14.3 | | -102.8 | |
| 18.3 | | -101 | |
| 21.3 | | -96.2 | |
| 24.8 | | -100 | |
| 28.3 | | -100 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

02

2

7-31-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | |
|--------------------|---------------------------------------|--|
| | Signal Generator Level for S-5 on USB | |
| | WITH DEVICE | WITHOUT DEVICE |
| 1.8 | | -105 |
| 3.8 | | -106 |
| 7.3 | | -105.4 |
| 10.3 | | -100.5 |
| 14.3 | | -102.8 |
| 18.3 | | -101 |
| 21.3 | | -98 |
| 24.8 | | -101.5 |
| 28.3 | | -100 |
| | | POWER - ON HONDA GEN. HONDA OUTSIDE PULSER. |

TEST
C-3

SYSTEM NUMBER
2

DATE
7-31-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -106 | |
| 3.8 | | -106 | |
| 7.3 | | -105 | |
| 10.3 | | -101.5 | |
| 14.3 | | -102.9 | |
| 18.3 | | -101 | |
| 21.3 | | -97.8 | |
| 24.8 | | -103.9 | |
| 28.3 | | -101.5 | |
| | | | |

TEST
C4

SYSTEM NUMBER
2

DATE
8-1-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -106 | |
| 3.8 | | -107.5 | |
| 7.3 | | -105.5 | |
| 10.3 | | -102.8 | |
| 14.3 | | -103.4 | |
| 18.3 | | -101.5 | |
| 21.3 | | -100 | |
| 24.8 | | -102.5 | |
| 28.3 | | -101.1 | |
| POWER-ON : BOTH SAFETY + NEUTRAL POWER LINES GROUNDED - EQUIP. GROUNDED, TUNED TO F 28.3 MHZ DURING PULSE. | | | |

TEST

SYSTEM NUMBER

DATE

DL

2

8-2-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | 105.1 | 105.9 | |
| 3.8 | 105.9 | 106.1 | |
| 7.3 | 104.7 | 105.4 | |
| 10.3 | 101.4 | 100.5 | |
| 14.3 | 102.3 | 102.7 | |
| 18.3 | 100.5 | 100.3 | |
| 21.3 | 97.7 | 94 | |
| 24.8 | 101.9 | 101.5 | |
| 28.3 | 101 | 101 | |
| | | | |

TEST SYSTEM NUMBER DATE
D15 R+T 2 8-7-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | |
|---|---------------------------------------|----------------|
| | Signal Generator Level for S-5 on USB | |
| | WITH DEVICE | WITHOUT DEVICE |
| 1.8 | | 99 |
| 3.8 | | 101 |
| 7.3 | | 104 |
| 10.3 | | 101 |
| 14.3 | | 103 |
| 18.3 | | 103 |
| 21.3 | | 100 |
| 24.8 | | 102.5 |
| 28.3 | | 105 |
| RECEIVER NOISE LEVEL AT S-5 LEVEL AFTER PULSE - CONTINUOUS NOISE AT S-5 - | | |

TEST
EL, 2+3

SYSTEM NUMBER
2

DATE
8-7-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|---|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -108.5 | |
| 3.8 | | -108.5 | |
| 7.3 | | -107.9 | |
| 10.3 | | -102 | |
| 14.3 | | -103.8 | |
| 18.3 | | -101.7 | |
| 21.3 | | -100 | |
| 24.8 | | -104 | |
| 28.3 | | -102 | |
| AFTER PULSE WITH TRANSCEIVER TRANSMITTING ON 10.374 MHz. | | | |

TEST
F1+2

SYSTEM NUMBER
2

DATE
8-7-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---|----------------|---------|
| | Signal Generator Level for 85 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | S-LEVEL |
| 1.8 | | -65 | S-9 |
| 3.8 | | -55 | S-15 |
| 7.3 | | -25 | S-15 |
| 10.3 | | -35 | S-7 |
| 14.3 | | -44 | S-20 |
| 18.3 | | -78 | S-6 |
| 21.3 | | (1) -81.2 | S-5 |
| 24.8 | | (1) -82.5 | S-5 |
| 28.3 | | -55 | S-4 |

RECEIVER NOISE GREATLY
INCREASED AFTER PULSE
TESTS

(1) ALSO READABLE AT S-0

FIRST READABLE
SIGNAL ABOVE
NOISE - AT S-LEVEL
SHOWN

TEST
PRE TEST

SYSTEM NUMBER
3

DATE
7-25-85

TRANSMITTER YAESU FT 726R

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|---------------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 144.5 | | 15 | | | ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| BIRD MODULE 50 C | | | | | |

TEST

SYSTEM NUMBER

DATE

D19,20,21+22/E12,13,14,15

3

8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|---------------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | WIAT | WIOIAT | WIAT | WIOIAT | |
| 144.5 | | 15 | | | ✓ |
| 144.5 | 15-NEMP 1 IN LINE | | | 13.5 | |
| 144.5 | 15-NEMP 2 IN-LINE | | | 14.0 | |
| 144.5 | 510V RF TEST BOX IN LINE | | | 1.5 | |
| 144.5 | JOSLYN RF TEST BOX IN-LINE | | | 7.0 | |
| 144.5 | BARREL + COAX (ONLY) IN LINE | | | 16.0 | |
| 144.5 | FISCHER FCC 250-150-UHF IN LINE | | | 18.5 | |
| | | | | | |
| | | | | | |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

A

3

7-30-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | |
|-----------------------|---------------------------------------|----------------|
| | Signal Generator Level for S-5 on USB | |
| | WITH DEVICE | WITHOUT DEVICE |
| 144.5 | | -92.0 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| HEWETT PACKARD 608D - | | |

TEST

SYSTEM NUMBER

DATE

B2

3

7-30-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

144.5

-70

107

TEST SYSTEM NUMBER DATE
 PRE TEST 4 7-25-85

TRANSMITTER ICOM IC-745/PS-35/SMB/AT100/SP3

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|--|------------------------|--------|-------------|--------|---------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 98 | | | ✓ |
| 3.8 | | 98 | | | ✓ |
| 7.3 | | 105 | | | ✓ |
| 10.3 | | 106 | | | ✓ |
| 14.3 | | 103 | | | ✓ |
| 18.3 | | 98 | | | ✓ |
| 21.3 | | 101 | | | ✓ |
| 24.8 | | 104 | | | ✓ |
| 28.3 | | 104 | | | ✓ |
| CW SWITCH TO VOX OR RF POWER SWITCH - MAX ANTENNA TUNER OFF - TRANSMIT SWITCH ON TX. | | | | | |

TEST

SYSTEM NUMBER

DATE

A

4

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 99 | | | ✓ |
| 3.8 | | 100 | | | ✓ |
| 7.3 | | 105 | | | ✓ |
| 10.3 | | 106 | | | ✓ |
| 14.3 | | 104 | | | ✓ |
| 18.3 | | 100 | | | ✓ |
| 21.3 | | 102 | | | ✓ |
| 24.8 | | 105 | | | ✓ |
| 28.3 | | 105 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

BL

4

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 98 | | | ✓ |
| 3.8 | | 94 | | | ✓ |
| 7.3 | | 100 | | | ✓ |
| 10.3 | | 102 | | | ✓ |
| 14.3 | | 99 | | | ✓ |
| 18.3 | | 96 | | | ✓ |
| 21.3 | | 99 | | | ✓ |
| 24.8 | | 102 | | | ✓ |
| 28.3 | | 102 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

B2

4

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-----------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 102 | | | ✓ |
| 3.8 | | 95 | | | ✓ |
| 7.3 | | 101 | | | ✓ |
| 10.3 | | 104 | | | ✓ |
| 14.3 | | 100 | | | ✓ |
| 18.3 | | 97 | | | ✓ |
| 21.3 | | 98 | | | ✓ |
| 24.8 | | 102 | | | ✓ |
| 28.3 | | 101 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

D3

4

8-5-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATI |
|-----------------|------------------------|---------|-------------|---------|--------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/O/IAT | W/IAT | W/O/IAT | |
| 1.8 | 100 | | 99 | | ✓ |
| 3.8 | 94 | | 94 | | ✓ |
| 7.3 | 100 | | 99 | | ✓ |
| 10.3 | 102 | | 102 | | ✓ |
| 14.3 | 100 | | 99 | | ✓ |
| 18.3 | 96 | | 95 | | ✓ |
| 21.3 | 98 | | 97 | | ✓ |
| 24.8 | 102 | | 101 | | ✓ |
| 28.3 | 101 | | 101 | | ✓ |
| | | | | | |

TEST
F 12

SYSTEM NUMBER
4

DATE
8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-------------------------------|------------------------|---------|-------------|---------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/O/IAT | W/IAT | W/O/IAT | |
| 1.8 | 98 | | 100 | 101 | ✓ |
| 3.8 | 93 | | 95 | 101 | ✓ |
| 7.3 | 99 | | 101 | 106 | ✓ |
| 10.3 | 101 | | 102 | 107 | ✓ |
| 14.3 | 98 | | 99 | 104 | ✓ |
| 18.3 | 95 | | 96 | 100 | ✓ |
| 21.3 | 96 | | 97 | 100 | ✓ |
| 24.8 | 99 | | 101 | 105 | ✓ |
| 28.3 | 99 | | 101 | 105 | ✓ |
| ANTENNA TUNER WORKS PERFECTLY | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
4

DATE
7-25-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|-------------|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -87 | |
| 3.8 | | -87 | |
| 7.3 | | -92.2 | |
| 10.3 | | -92.8 | |
| 14.3 | | -91.7 | |
| 18.3 | | -89.2 | |
| 21.3 | | -89.9 | |
| 24.8 | | -89 | |
| 28.3 | | -90.6 | |
| ANTENNA TUNER | CONNECTORS USED | PRE AMP-ON | RF GAIN-MAX |
| 1.8 - 4 | | | |
| 3.8 - 3 | | | |
| 7.3 } 2 | | | |
| 10.3 } 2 | | | |
| 14.3 } 1 | | | |
| 18.3 } 1 | | | |
| 21.3 } 1 | | | |
| 24.8 } 1 | | | |
| 28.3 } 1 | | | |

TEST

SYSTEM NUMBER

DATE

A

4

7-28-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | - 89.1 | |
| 3.8 | | - 89 | |
| 7.3 | | - 94 | |
| 10.3 | | - 94.2 | |
| 14.3 | | - 93.9 | |
| 18.3 | | - 88 | |
| 21.3 | | - 92.3 | |
| 24.8 | | - 85.1 | |
| 28.3 | | - 92.0 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

B-1

4

7-28-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -89 | |
| 3.8 | | -88.9 | |
| 7.3 | | -93.5 | |
| 10.3 | | -94.2 | |
| 14.3 | | -93.5 | |
| 18.3 | | -87.5 | |
| 21.3 | | -92.3 | |
| 24.8 | | -85 | |
| 28.3 | | -92.3 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

B2

4

7-29-85

RECEIVER ICOM

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|-------------------------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -87 | |
| 3.8 | | -87 | |
| 7.3 | | -92.3 | |
| 10.3 | | -92.4 | |
| 14.3 | | -92.3 | |
| 18.3 | | -87 | |
| 21.3 | | -91.4 | |
| 24.8 | | -85.6 | |
| 28.3 | | -92.2 | |
| | | PRE AMP - ON RF GAIN - MAX | |

TEST

SYSTEM NUMBER

DATE

D

4

8-5-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | |
|--------------------|---------------------------------------|-------------------------|
| | Signal Generator Level for S-5 on USB | |
| | WITH DEVICE | WITHOUT DEVICE |
| 1.8 | | -86.8 |
| 3.8 | | -85 |
| 7.3 | | -90 |
| 10.3 | | -90.2 |
| 14.3 | | -90 |
| 18.3 | | -85.8 |
| 21.3 | | -90 |
| 24.8 | | -81.9 |
| 28.3 | | -89 |
| | | THRU - ANTENNA TUNER |

TEST

SYSTEM NUMBER

DATE

F12

4

8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | -86.3 | | |
| 3.8 | -84.5 | | |
| 7.3 | -90 | | |
| 10.3 | -91 | | |
| 14.3 | -90.3 | | |
| 18.3 | -82.6 | | |
| 21.3 | -89.5 | | |
| 24.8 | * -87.6 | | |
| 28.3 | -88.9 | | |
| | WITH ANTENNA TUNER IN CIRCUIT | | |
| | * GAIN 9 dB w/o TUNER | | |

TEST
PRE TEST

SYSTEM NUMBER
5

DATE
7-25-85

TRANSMITTER ICOM 1C 745 / PS 35

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 100 | | | ✓ |
| 3.8 | | 100 | | | ✓ |
| 7.3 | | 106 | | | ✓ |
| 10.3 | | 108 | | | ✓ |
| 14.3 | | 106 | | | ✓ |
| 18.3 | | 101 | | | ✓ |
| 21.3 | | 105 | | | ✓ |
| 24.8 | | 108 | | | ✓ |
| 28.3 | | 108 | | | ✓ |
| | | | | | |

TEST

A

SYSTEM NUMBER

5

DATE

7-30-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 101 | | | ✓ |
| 3.8 | | 103 | | | ✓ |
| 7.3 | | 109 | | | ✓ |
| 10.3 | | 111 | | | ✓ |
| 14.3 | | 109 | | | ✓ |
| 18.3 | | 105 | | | ✓ |
| 21.3 | | 106 | | | ✓ |
| 24.8 | | 108 | | | ✓ |
| 28.3 | | 110 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

BR

5

7-30-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 102 | | | ✓ |
| 3.8 | | 103 | | | ✓ |
| 7.3 | | 108 | | | ✓ |
| 10.3 | | 110 | | | ✓ |
| 14.3 | | 108 | | | ✓ |
| 18.3 | | 103 | | | ✓ |
| 21.3 | | 106 | | | ✓ |
| 24.8 | | 108 | | | ✓ |
| 28.3 | | 109 | | | ✓ |
| | | | | | |

TEST
DH

SYSTEM NUMBER
5

DATE
8-5-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 1.8 | | 104 | | 102 | ✓ |
| 3.8 | | 105 | | 103 | ✓ |
| 7.3 | | 109 | | 109 | ✓ |
| 10.3 | | 111 | | 110 | ✓ |
| 14.3 | | 110 | | 109 | ✓ |
| 18.3 | | 106 | | 105 | ✓ |
| 21.3 | | 108 | | 108 | ✓ |
| 24.8 | | 111 | | 111 | ✓ |
| 28.3 | | 111 | | 110 | ✓ |

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

TEST

SYSTEM NUMBER

DATE

F10

5

8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 100 | | 100 | ✓ |
| 3.8 | | 101 | | 100 | ✓ |
| 7.3 | | 107 | | 106 | ✓ |
| 10.3 | | 110 | | 109 | ✓ |
| 14.3 | | 107 | | 106 | ✓ |
| 18.3 | | 103 | | 102 | ✓ |
| 21.3 | | 104 | | 103 | ✓ |
| 24.8 | | 109 | | 108 | ✓ |
| 28.3 | | 106 | | 105 | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

F 11

5

8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 102 | | 104 | ✓ |
| 3.8 | | 103 | | 104 | ✓ |
| 7.3 | | 108 | | 110 | ✓ |
| 10.3 | | 110 | | 110 | ✓ |
| 14.3 | | 108 | | 110 | ✓ |
| 18.3 | | 104 | | 104 | ✓ |
| 21.3 | | 105 | | 104 | ✓ |
| 24.8 | | 109 | | 109 | ✓ |
| 28.3 | | 106 | | 105 | ✓ |
| | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
5

DATE
7-25-85

RECEIVER ICOM IC-745 / IC PS-35

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -92.8 | |
| 3.8 | | -92.7 | |
| 7.3 | | -98.4 | |
| 10.3 | | -98.5 | |
| 14.3 | | -97.7 | |
| 18.3 | | -95.5 | |
| 21.3 | | -96 | |
| 24.8 | | -95.2 | |
| 28.3 | | -96.2 | |
| | | | |

TEST

A

SYSTEM NUMBER

5

DATE

7-30-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -91.8 | |
| 3.8 | | -92.5 | |
| 7.3 | | -98.6 | |
| 10.3 | | -99 | |
| 14.3 | | -99 | |
| 18.3 | | -96.7 | |
| 21.3 | | -97 | |
| 24.8 | | -95.7 | |
| 28.3 | | -97.9 | |
| | | | |

TEST
B2

SYSTEM NUMBER
5

DATE
7-30-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -86.9 | |
| 3.8 | | -93 | |
| 7.3 | | -94 | |
| 10.3 | | -94 | |
| 14.3 | | -93.4 | |
| 18.3 | | -91.1 | |
| 21.3 | | -90.9 | |
| 24.8 | | -90.6 | |
| 28.3 | | -93 | |
| B-2 POWER CURDS EXTENDED | | | |

TEST

D4

SYSTEM NUMBER

5

DATE

8-5-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -89 | |
| 3.8 | | -89 | |
| 7.3 | | -95.7 | |
| 10.3 | | -96.2 | |
| 14.3 | | -95.8 | |
| 18.3 | | -93.4 | |
| 21.3 | | -93.1 | |
| 24.8 | | -92.2 | |
| 28.3 | | -94 | |
| | | | |

TEST
F10T+R

SYSTEM NUMBER
5

DATE
8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | 87.7 | |
| 3.8 | | 87.4 | |
| 7.3 | | 94.0 | |
| 10.3 | | 94.5 | |
| 14.3 | | 92.7 | |
| 18.3 | | 91.2 | |
| 21.3 | | 91.2 | |
| 24.8 | | 90 | |
| 28.3 | | 92.8 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

F11

5

8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | -87.5 | | |
| 3.8 | -82.3 | | |
| 7.3 | -89.8 | | |
| 10.3 | -90.1 | | |
| 14.3 | -89 | | |
| 18.3 | -87.5 | | |
| 21.3 | -89.5 | | |
| 24.8 | -89.5 | | |
| 28.3 | -89.5 | | |
| | | | |

TEST
PRE TEST

SYSTEM NUMBER
6

DATE
7-29-85

TRANSMITTER ICOM IC-27A

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|-----------------|-------------------|--------|-------------|--------|----------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 144.0 (25W) | | 19 | | | ✓ |
| 144.0 (5W) | | 4 | | | ✓ |
| | | | | | |
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| | | | | | |
| | | | | | |
| BIRD MODULE | 50C | (50W) | | | |

TEST
PRE TEST

SYSTEM NUMBER
6

DATE
7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|-------------------------------|---------------------------------------|------------------|----------------------------------|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| <i>144.0</i> | | <i>-93</i> | |
| | | | |
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| | | | |
| | | | |
| <i>FM - 400 HZ MODULATION</i> | <i>BODNTON 202H</i> | <i>FM SIGNAL</i> | <i>-5KHZ DEVIATION GENERATOR</i> |

TEST

SYSTEM NUMBER

DATE

B

6

7-31-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | |
|--|---------------------------------------|----------------|
| | Signal Generator Level for S-5 on USB | |
| | WITH DEVICE | WITHOUT DEVICE |
| 144.0 | | * 76 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| * THIS MEASUREMENT IS NOT GOOD DATA SEE TEST D 8-5-85 | | |

TEST
PRE TEST

SYSTEM NUMBER
7

DATE
7-26-85

TRANSMITTER ICOM IC-02AT HAND HELD

| FREQUENCY (MHZ) | POWER OUT (WATTS) (FM) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 145.0 - H1 | | 4.6 | | | ✓ |
| 145.0 - L0 | | 0.7 | | | ✓ |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| BIRD MODULE | 50c | | | | |

TEST

SYSTEM NUMBER

DATE

D14

7

8-5-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) | | | | USB VOICE MODULATION |
|--|-------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 145.0 HI | | 4.0 | | 0 | ✓ |
| 145.0 LO | | 0.8 | | 0 | ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| <p>DEVICE FCC 450-120 WOULD NOT TRANSMIT - IT WAS REPLACED WITH A NEW FCC 450-120 WHICH DID TRANSMIT THE RF SIGNAL</p> | | | | | |

TEST
F-18, 20, 23, 24, 30 + 31

SYSTEM NUMBER
7

DATE
8-9-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (FM) | | | | USB VOICE MODULATION |
|--|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| UNK HI | | 3.8 | | | ✓ |
| UNK LO | | 0.5 | | | ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |
| LIQUID CRYSTAL DISPLAY FAILED WHEN PULSED HAND HELD RADIO WAS PLUGGED INTO CHARGER - CHARGER WAS PULSED WITH AC DRIVE PULSE - HAND HELD SURVIVED FIELD PULSE WITH ANTENNA ON. | | | | | |

TEST SYSTEM NUMBER DATE
 PRE TEST 7 7-26-85

RECEIVER 1COM 1C-02AT HAND HELD

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 145.0 | | - 95 | |
| | | | |
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| | | | |
| | | | |
| BOONTON 202 H SIGNAL GENERATOR - FM - ADJUST SIGNAL LEVEL EVEN WITH RIGHT EDGE OF THE FIGURE FIVE ON THE HANDHELD (LCD) DISPLAY | | | |

TEST

SYSTEM NUMBER

DATE

A

7

7-30-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

145.0

-96

TEST

SYSTEM NUMBER

DATE

D14

7

8-5-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

145.0

- 94

- 94

TEST

SYSTEM NUMBER

DATE

F18, 20, 23, 24, 30, 31

7

8-9-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--|---|----------------|----------------|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| UNK | | -120 | |
| | | | |
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| | | | |
| LC DISPLAY RCVR WORKS S-METER IS AT - 120 dBm ALSO, PICKS- REPEATER - | FAILED UNDER TEST - OK, BUT CAN'T DETERMINE FREQ. NOT WORKING - STRONG AUDIBLE SIGNAL UP TWO-WAY CONVERSATION | | HEARD F. 71 |

TEST

SYSTEM NUMBER

DATE

A

8

7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 144.0 (1) | | 71 | |
| 144.0 (2) | | 102 | |
| | | | |
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| | | | |
| (1) HP 608D | SIGNAL GEN. | | |
| (2) BOONTON | 202H SIG-GEN. | | |

TEST

SYSTEM NUMBER

DATE

B

8

7-31-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 144.0 (1) | | 77.0 | |
| 144.0 (2) | | 80.0 | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| (1) HP 608D | | | |
| (2) BOONTON - | 202 H - ONLY 30 MIN WARM-UP TODAY- | | |

TEST SYSTEM NUMBER DATE
 D9 8 8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 144.0 (1) | 76 | | |
| 144.0 (2) | 80.5 | | |
| | | | |
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| | | | |
| (1) HP 608 D | | | |
| (2) BOONTON 202 H | | | |

TEST

SYSTEM NUMBER

DATE

F36+37

8

8-9-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 144.5 (1) | 69 | | |
| 144.5 (2) | 91.5 | | |
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| | | | |
| (1) HP 608 D | | | |
| (2) BOUNTON 202 H | | | |

TEST
PRE TEST

SYSTEM NUMBER
9

DATE
7-25-85

TRANSMITTER 1COM 471 A

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|--------------------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 430.0 | | 22.5 | | | ✓ |
| 435.0 | | 24. | | | ✓ |
| | | | | | |
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| PRE AMP - ON RF - MAX | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
9

DATE
7-25-85

RECEIVER

1 COM 471A

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|-------------------------------------|---------------------------------------|----------------|-----|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 432.0 | | - 102 * | |
| | | | |
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| * 102 c/B TRANSFER ON MAXIMUM | ATTENUATION OSCILLATOR OUTPUT. | MODEL 540B | -HP |

TEST

SYSTEM NUMBER

DATE

F38+39

9

8-9-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|------------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for 3-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 435.0 | | -132 | |
| | | | |
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| | | | |
| USING HP MODEL 540B | TRANSFER SET AT 215 MHz | OSCILLATOR | |

TEST
PRE TEST

SYSTEM NUMBER
10

DATE
7-25-85

TRANSMITTER KENWOOD TS 430S/PS 430/MC 80/AT 250/SP 430

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 94 | | | ✓ |
| 3.8 | | 104 | | | ✓ |
| 7.3 | | 105 | | | ✓ |
| 10.3 | | 105 | | | ✓ |
| 14.3 | | 106 | | | ✓ |
| 18.3 | - | - | - | - | - |
| 21.3 | | 99 | | | ✓ |
| 24.8 | - | - | - | - | - |
| 28.3 | | 95 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

A

10

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 95 | | | ✓ |
| 3.8 | | 106 | | | ✓ |
| 7.3 | | 109 | | | ✓ |
| 10.3 | | 108 | | | ✓ |
| 14.3 | | 110 | | | ✓ |
| 18.3 | | - | | | |
| 21.3 | | 107 | | | ✓ |
| 24.8 | | - | | | |
| 28.3 | | 94 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

D-5

10

8-7-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 94.5 | | 94 | ✓ |
| 3.8 | | 104 | | 104 | ✓ |
| 7.3 | | 105 | | 105 | ✓ |
| 10.3 | | 105 | | 104 | ✓ |
| 14.3 | | 105 | | 105 | ✓ |
| 18.3 | | - | | | |
| 21.3 | | 99 | | 99 | ✓ |
| 24.8 | | - | | | |
| 28.3 | | 91 | | 90 | ✓ |
| | | | | | |

TEST
F5+6

SYSTEM NUMBER
10

DATE
8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|----------------------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | 84 | | 84 | | ✓ |
| 3.8 | 90 | | 88 | | ✓ |
| 7.3 | 96 | | 97 | | ✓ |
| 10.3 | 96 | | 96 | | ✓ |
| 14.3 | 95 | | 95 | | ✓ |
| 18.3 | - | | - | | |
| 21.3 | 87 | | 85 | | ✓ |
| 24.8 | - | | - | | |
| 28.3 | 77 | | 80 | | ✓ |
| ANTENNA TUNER WORKS FINE - | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
10

DATE
7-25-85

RECEIVER KENWOOD TS430S/PS-430/MC 80/AT 250/SP 430

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -86.2 | |
| 3.8 | | -86.2 | |
| 7.3 | | -84.2 | |
| 10.3 | | -87.3 | |
| 14.3 | | -87.3 | |
| 18.3 | | -86.5 | |
| 21.3 | | -86.6 | |
| 24.8 | | -83.0 | |
| 28.3 | | -83.0 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

A

10

7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|--|--|
| | Signal Generator Level for 3-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -83.1 | |
| 3.8 | | -85.0 | |
| 7.3 | | -82.6 | |
| 10.3 | | -85.7 | |
| 14.3 | | -86 | |
| 18.3 | | -84.8 | |
| 21.3 | | -85.4 | |
| 24.8 | | -81.2 | |
| 28.3 | | -82.5 | |
| | | WITH ANTENNA TUNER ON LINE (AUTOMATIC) | |

TEST

BL

SYSTEM NUMBER

10

DATE

7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-6 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -87.5 | |
| 3.8 | | -88.4 | |
| 7.3 | | -86 | |
| 10.3 | | -89 | |
| 14.3 | | -88.2 | |
| 18.3 | | -87.3 | |
| 21.3 | | -87.6 | |
| 24.8 | | -84.9 | |
| 28.3 | | -85.7 | |
| | | | |

TEST
D5

SYSTEM NUMBER
10

DATE
8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -81.4 | |
| 3.8 | | -84.7 | |
| 7.3 | | -79.2 | |
| 10.3 | | -83.8 | |
| 14.3 | | -84.2 | |
| 18.3 | | -81.6 | |
| 21.3 | | -83.6 | |
| 24.8 | | -79.1 | |
| 28.3 | | -77.8 | |
| | | | |

TEST
F5+6

SYSTEM NUMBER
10

DATE
8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | -84.1 | | |
| 3.8 | -86.5 | | |
| 7.3 | -81.9 | | |
| 10.3 | -87.0 | | |
| 14.3 | -86.3 | | |
| 18.3 | -84.2 | | |
| 21.3 | -83.4 | | |
| 24.8 | -81.2 | | |
| 28.3 | -84.8 | | |
| | WITH ANTENNA TUNER - | | |

TEST
PRE TEST

SYSTEM NUMBER
11

DATE
7-25-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-----------------------------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 1.8 | | 97 | | | ✓ |
| 3.8 | | 108 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 110 | | | ✓ |
| 14.3 | | 110 | | | ✓ |
| 18.3 | | - | | | - |
| 21.3 | | 107 | | | ✓ |
| 24.8 | | - | | | - |
| 28.8 | | 100 | | | ✓ |
| 50 Ω DUMMY LOAD CW - WIDE BAND | | | | | |

TEST

SYSTEM NUMBER

DATE

A

11

7-30-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 97 | | | ✓ |
| 3.8 | | 108 | | | ✓ |
| 7.3 | | 111 | | | ✓ |
| 10.3 | | 111 | | | ✓ |
| 14.3 | | 112 | | | ✓ |
| 18.3 | - | - | - | - | - |
| 21.3 | | 108 | | | ✓ |
| 24.8 | - | - | - | - | - |
| 28.3 7 | | 96 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

B2

11

7-30-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 1.8 | | 98 | | | ✓ |
| 3.8 | | 109 | | | ✓ |
| 7.3 | | 111 | | | ✓ |
| 10.3 | | 111 | | | ✓ |
| 14.3 | | 112 | | | ✓ |
| 18.3 | | - | | | - |
| 21.3 | | 110 | | | ✓ |
| 24.8 | | - | | | - |
| 28.3 8 | | 98 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

D17, E5

11

8-7-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-------------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 97 | | | ✓ |
| 3.8 | | 108 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 111 | | | ✓ |
| 14.3 | | 110 | | | ✓ |
| 18.3 | | | | | |
| 21.3 | | 107 | | | ✓ |
| 24.8 | | | | | |
| 28.2 ⁸ | | 97 | | | ✓ |

TEST
EG

SYSTEM NUMBER
11

DATE
8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-----------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 95 | | 90 | ✓ |
| 3.8 | | 105 | | 106 | ✓ |
| 7.3 | | 109 | | 109 | ✓ |
| 10.3 | | 108 | | 107 | ✓ |
| 14.3 | | 109 | | 108 | ✓ |
| 18.3 | | - | | | - |
| 21.3 | | 106 | | 105 | ✓ |
| 24.8 | | - | | | - |
| 28.38 | | 99 | | 90 | ✓ |
| | | | | | |

TEST
E 7+8

SYSTEM NUMBER
11

DATE
8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-----------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | | 96 | ✓ | |
| 3.8 | | | 106 | ✓ | |
| 7.3 | | | 108 | ✓ | |
| 10.3 | | | 107 | ✓ | |
| 14.3 | | | 109 | ✓ | |
| 18.3 | | | - | | |
| 21.3 | | | 105 | ✓ | |
| 24.8 | | | - | | |
| 28.3 8 | | | 93 | ✓ | |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

D 18, E 9, 10, 11

11

8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-----------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 97 | | | ✓ |
| 3.8 | | 107 | | | ✓ |
| 7.3 | | 110 | | | ✓ |
| 10.3 | | 109 | | | ✓ |
| 14.3 | | 110 | | | ✓ |
| 18.3 | | - | | | |
| 21.3 | | 106 | | | ✓ |
| 24.8 | | | | | |
| 28.3 | | 99 | | | ✓ |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

F7

11

8-8-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-----------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | 98 | | 98 | ✓ |
| 3.8 | | 109 | | 108 | ✓ |
| 7.3 | | 110 | | 110 | ✓ |
| 10.3 | | 109 | | 108 | ✓ |
| 14.3 | | 108 | | 108 | ✓ |
| 18.3 | | | | | |
| 21.3 | | 107 | | 107 | ✓ |
| 24.8 | | | | | |
| 28.38 | | 99 | | 100 | ✓ |
| | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
11

DATE
7-25-85

RECEIVER KENWOOD TS430S / PS430 / MC 80

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-6 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -88.2 | |
| 3.8 | | -89.1 | |
| 7.3 | | -86.4 | |
| 10.3 | | -89.5 | |
| 14.3 | | -89.6 | |
| 18.3 | | -89.2 | |
| 21.3 | | -88 | |
| 24.8 | | -84.7 | |
| 28.3 | | -86.7 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

A

11

7-30-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | - 88 | |
| 3.8 | | - 88.2 | |
| 7.3 | | - 85.5 | |
| 10.3 | | - 89.1 | |
| 14.3 | | - 89.2 | |
| 18.3 | | - 88.3 | |
| 21.3 | | - 87.8 | |
| 24.8 | | - 83.7 | |
| 28.3 | | - 86.2 | |
| | | | |

TEST

B2

SYSTEM NUMBER

11

DATE

7-30-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -83.3 | |
| 3.8 | | -85 | |
| 7.3 | | -81.1 | |
| 10.3 | | -83.8 | |
| 14.3 | | -83.7 | |
| 18.3 | | -83.7 | |
| 21.3 | | -81.8 | |
| 24.8 | | -81.4 | |
| 28.3 | | -81.5 | |
| | | | |

TEST
D-17 + E-5

SYSTEM NUMBER
11

DATE
8-7-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -84 | |
| 3.8 | | -85.6 | |
| 7.3 | | -82 | |
| 10.3 | | -84.3 | |
| 14.3 | | -84.3 | |
| 18.3 | | -85 | |
| 21.3 | | -82 | |
| 24.8 | | -79.2 | |
| 28.3 28.8 | | -83 | |
| | | | |

TEST
E6

SYSTEM NUMBER
11

DATE
8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-6 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -84 | |
| 3.8 | | -85.5 | |
| 7.3 | | -81.8 | |
| 10.3 | | -85 | |
| 14.3 | | -84.8 | |
| 18.3 | | -85.2 | |
| 21.3 | | -83.9 | |
| 24.8 | | -79.1 | |
| 28.3 | | -84 | |
| | | | |

TEST
E7+8

SYSTEM NUMBER
11

DATE
8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -83.7 | |
| 3.8 | | -85.8 | |
| 7.3 | | -81.4 | |
| 10.3 | | -85.4 | |
| 14.3 | | -85.4 | |
| 18.3 | | -86.1 | |
| 21.3 | | -83.9 | |
| 24.8 | | -78.3 | |
| 28.3 | | -82 | |
| | | | |

TEST
D18, E9, 10+11

SYSTEM NUMBER
11

DATE
8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | -84 | |
| 3.8 | | -85 | |
| 7.3 | | -81 | |
| 10.3 | | -84 | |
| 14.3 | | -84 | |
| 18.3 | | -84.8 | |
| 21.3 | | -82.2 | |
| 24.8 | | -78 | |
| 28.3 | | -83.3 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

F7

11

8-8-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | -85 | | |
| 3.8 | -86.5 | | |
| 7.3 | -81.5 | | |
| 10.3 | -86 | | |
| 14.3 | -86 | | |
| 18.3 | -86.8 | | |
| 21.3 | -86.2 | | |
| 24.8 | -79 | | |
| 28.3 | -81.4 | | |
| | | | |

TEST SYSTEM NUMBER DATE
 PRE TEST 12 7-25-85

TRANSMITTER KENWOOD TR 7930

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------------|------------------------|---------|-------------|---------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/O/IAT | W/IAT | W/O/IAT | |
| 144.0 (25W) | | 23.5 | | | ✓ |
| 144.0 (5W) | | 5.7 | | | ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 12 VOLT DC POWER - | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
12

DATE
7-25-85

RECEIVER KENWOOD TR -7930

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | |
|--------------------------|---------------------------------------|----------------|
| | Signal Generator Level for S-5 on USB | |
| | WITH DEVICE | WITHOUT DEVICE |
| 144.0 | | -106.5 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| BOONTON FM 1 KHZ TONE | SIGNAL GEN | -202 H |
| | - | |

TEST

SYSTEM NUMBER

DATE

B

12

7-31-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

144.0

- 90

TEST
PRE TEST

SYSTEM NUMBER
14

DATE
7-26-85

TRANSMITTER
DRAKE

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | - | | | |
| 3.8 | | 90 | | | ✓ |
| 7.3 | | 87 | | | ✓ |
| 10.3 | | - | | | |
| 14.3 | | 90 | | | ✓ |
| 18.3 | | - | | | |
| 21.3 | | 75 | | | ✓ |
| 24.3 | | | | | |
| 28.3 | | | | | |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

A

14

7-29-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIO |
|-----------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | | | | |
| 3.8 | | 65 | | | ✓ |
| 7.3 | | 75 | | | ✓ |
| 10.3 | | | | | |
| 14.3 | | 120 | | | ✓ |
| 18.3 | | | | | |
| 21.3 | | 105 | | | ✓ |
| 24.8 | | | | | |
| 28.3 | | | | | |

TEST

SYSTEM NUMBER

DATE

B

14

7-31-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | | | | |
| 3.8 | | 107 | | | ✓ |
| 7.3 | | 125 | | | ✓ |
| 10.3 | | | | | |
| 14.3 | | 99 | | | ✓ |
| 18.3 | | | | | |
| 21.3 | | 90 | | | ✓ |
| 24.8 | | | | | |
| 28.3 | | | | | |

TEST

SYSTEM NUMBER

DATE

D

14

8-5-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 1.8 | | | | | |
| 3.8 | | 71 | | 71 | ✓ |
| 7.3 | | 72 | | 105 | ✓ |
| 10.3 | | | | | |
| 14.3 | | 90 | | 62 | ✓ |
| 18.3 | | | | | |
| 21.3 | | 48 | | 50 | ✓ |
| 24.8 | | | | | |
| 28.3 | | | | | |
| | | | | | |

TEST

SYSTEM NUMBER

DATE

F16+17

14

8-9-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATIC |
|-----------------|------------------------|--------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/IAT | W/OIAT | W/IAT | W/OIAT | |
| 1.8 | | | | | |
| 3.8 | | 35 | | 38 | ✓ |
| 7.3 | | 40 | | 35 | ✓ |
| 10.3 | | | | | |
| 14.3 | | 50 | | 40 | ✓ |
| 18.3 | | | | | |
| 21.3 | | 80 | | 75 | ✓ |
| 24.8 | | | | | |
| 28.3 | | | | | |

TEST
PRE TEST

SYSTEM NUMBER
14

DATE
7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | | |
| 3.8 | | -55 | |
| 7.3 | | -55.8 | |
| 10.3 | | - | |
| 14.3 | | -56 | |
| 18.3 | | - | |
| 21.3 | | -52.2 | |
| 24.8 | | - | |
| 28.35 | | -54.3 | |
| | | | |

TEST

SYSTEM NUMBER

DATE

A

14

7-29-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|---|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | | - | |
| 3.8 | | -91.2 | |
| 7.3 | | -91.3 | |
| 10.3 | | - | |
| 14.3 | | -81.9 | |
| 18.3 | | - | |
| 21.3 | | -82.1 | |
| 24.8 | | - | |
| 28.5 | | -82.1 | |
| | | dB INCREASE DUE TO OPERATOR IMPROVEMENT | |

TEST

SYSTEM NUMBER

DATE

B

14

7-31-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

1.8

-

3.8

-88

7.3

-89.7

10.3

-

14.3

-87.4

18.3

-

21.3

-80

24.8

-

28.3

-82

AGC SET ON S FOR SSB

TEST

SYSTEM NUMBER

DATE

D

14

8-5-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | - | | |
| 3.8 | 84.1 | | |
| 7.3 | 83.1 | | |
| 10.3 | - | | |
| 14.3 | 81.9 | | |
| 18 | - | | |
| 21.3 | 77.3 | | |
| 24.8 | - | | |
| 28.3 | - | | |

TEST
F16+17

SYSTEM NUMBER
14

DATE
8-9-85

RECEIVER

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | | |
|--------------------|---------------------------------------|----------------|--|
| | Signal Generator Level for S-5 on USB | | |
| | WITH DEVICE | WITHOUT DEVICE | |
| 1.8 | — | — | |
| 3.8 | 84.8 | -84.8 | |
| 7.3 | 85.0 | -84.1 | |
| 10.3 | — | — | |
| 14.3 | 81.5 | 79.5 | |
| 18.3 | — | — | |
| 21.3 | 75.0 | 73.3 | |
| 24.8 | — | | |
| 28.3 | | | |
| | | | |

TEST

SYSTEM NUMBER

DATE

PRETEST

16

7-26-85

TRANSMITTER

SWAN

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | USB VOICE MODULATION |
|-----------------------------------|------------------------|--------|-------------|--------|----------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 52.0 | | 75 | | | ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| SET UP PAGE 8 BIRD MODULE 250H | | | | | |

TEST

SYSTEM NUMBER

DATE

A

16

7-30-85

TRANSMITTER

| FREQUENCY (MHZ) | POWER OUT (WATTS) (CW) | | | | SSB VOICE MODULATIO |
|------------------------------------|------------------------|----------|-------------|--------|---------------------------|
| | WITHOUT DEVICE | | WITH DEVICE | | |
| | W/AT | W/O/AT | W/AT | W/O/AT | |
| 52.0 | | * 105 | | | ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| * INCREASE DUE TO BETTER LOADING - | | | | | |

TEST SYSTEM NUMBER DATE
 PRE TEST 16 7-26-85

RECEIVER SWAN 250

| FREQUENCY (MHZ) | SIGNAL LEVEL (dBm) | |
|--------------------|---------------------------------------|----------------------------|
| | Signal Generator Level for S-5 on USB | |
| | WITH DEVICE | WITHOUT DEVICE |
| 52.0 | | -85 |
| RF GAIN MAX | | -120 STRONG AUDIBLE SIGNAL |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| AUDIO GAIN | -FULL UP | |
| RF GAIN | 1100 O'CLOCK POSITION. | |
| TUNE FOR | AN AUDIBLE SIGNAL | |
| HP 608D | SIG GEN | |

TEST

B

SYSTEM NUMBER

16

DATE

7-31-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

52.0

-120

STRONG

AUDIBLE

SIGNAL

TEST

SYSTEM NUMBER

DATE

D

16

8-5-85

RECEIVER

SIGNAL LEVEL (dBm)

FREQUENCY
(MHZ)

Signal Generator Level for S-5 on USB

WITH DEVICE

WITHOUT DEVICE

52.0

-120

-120

STRONG AUDIBLE SIGNAL

