

Aerospace Electronic Systems  
Honeywell  
P.O. Box 29000  
Phoenix, Arizona 85308-9000  
602 436-8000

November 29, 2001  
5150-0111-1896

Federal Communications Commission  
Equipment Approval Services  
P.O. Box 358315  
Pittsburgh, PA 15251-5313

Subject: HP-700 FCC Type Acceptance Report Data (Non-Confidential)

Dear Sir or Madam:

The enclosed information is being furnished to support FCC Type Certification of the HP-700 High Power Amplifier, P/N 7516251. This information which comprises primarily the applicable test data has been extracted from the FCC Type Acceptance Report, Honeywell document EB7516254. This letter and accompanying information is being submitted as exhibit type Test Report.

Please note that in spite of the Proprietary Notice contained on the front page of the referenced report, only those pages that are non-confidential and relevant to this FCC application are contained herein.

Regards,



Charles L. Dosdall  
SATCOM Technical Manager  
(602) 436-4653  
E-mail: [Charlie.Dosdall@Honeywell.com](mailto:Charlie.Dosdall@Honeywell.com)

Honeywell, Intl.,  
Commercial Electronic Systems – Bell Road (CES - BR)  
5353 W. Bell Road  
Glendale, AZ 8530

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

## 6. TEST PROCEDURES AND DATA

TEST PROCEDURES AND DATA:

TEST NO: 1

1.0 DESCRIPTION OF TEST: Output Power2.0 SPECIFICATIONS: 47 CFR 87.13147 CFR 2.985a47 CFR 2.985c

3.0 EQUIPMENT REQUIRED:

|   | <u>TYPE</u>          | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u> |
|---|----------------------|---------------------|--------------|-----------------|
| A | High Power Amplifier | Honeywell           | HP700        | 97110006        |
| B | Satellite Data Unit  | Honeywell           | SD600        | 95040674        |
| C | 20 dB Attenuator     | Narda               | 757-20       | -               |
| D | Spectrum Analyzer    | Hewlett Packard     | 8566B        | AV55142         |
| E | Power Meter          | Hewlett Packard     | 438B         | AV53490         |
| F | Directional Coupler  | Narda               | 3242B-20     | -               |
| G | Terminal (PC)        | Dell w/ Procom      | -            | -               |
| H | 20 dB Attenuator     | Narda               | 766-20       | -               |
| I | 30 dB Attenuator     | Weinschel Eng.      | 4830-33      | -               |
| J | Diplexer/LNA         | Com Atlantic        | P/N 103624   | S/N 1690116     |
| K | Plotter              | Hewlett Packard     | 7475A        | AV58285         |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

23  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

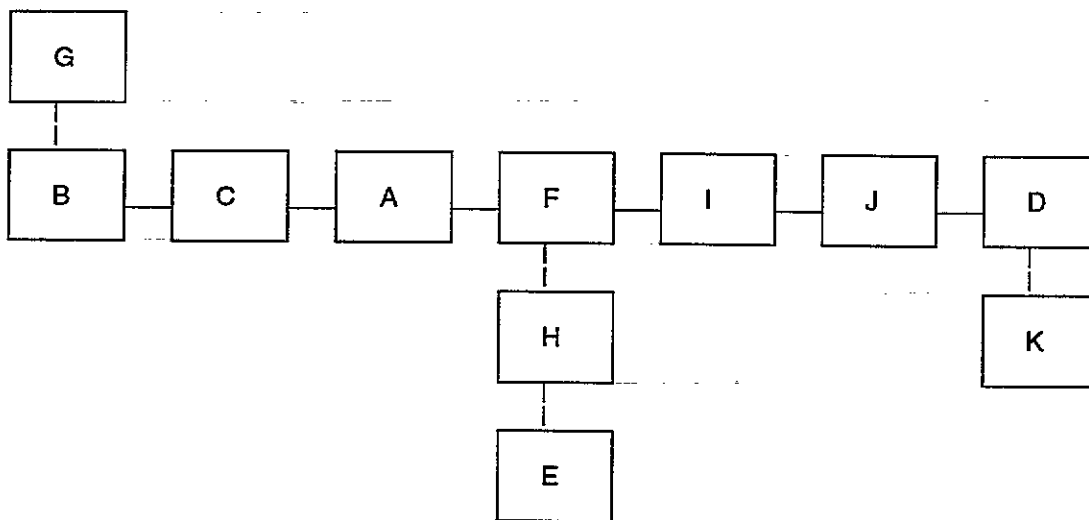
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 1

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

24  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 1

## 5.0 PROCEDURE:

1. Connect the equipment as shown in the block diagram in Section 4.0 of test number 1.
2. Using the terminal set the SDU back-off attenuator to 0 dB. (This is the nominal back-off setting.)
3. Using the terminal set the SDU to transmit a CW carrier on channel 1 at 1643.6075 MHz. (This frequency selection puts the SDU on the middle of the SAW filter band).
4. Using the terminal set the HPA back-off attenuator to produce  $3.5 \text{ dBm} \pm 0.5 \text{ dB}$  level on power meter. (This level corresponds to  $25 \text{ W} \pm 5 \text{ W}$  at the HPA RF connector.) Record this reading.
5. Using the Qume terminal set the channel frequency to 1626.7225 MHz and record the power reading.
6. Using the Qume terminal set the channel frequency to 1656.9865 MHz and record the power reading.
7. Repeat steps 3 through 6 for channel number two and three.

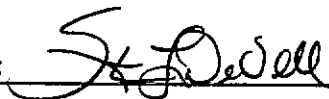
**NOTE:** The total L-band loss between HPA TX port and the power meter is 40.5 dB. This includes the insertion loss of the attenuator and the cable loss of the SATCOM Qual Rack.

**NOTE:** The primary input power voltage tolerance is  $115\text{V} \pm 10$  percent and the frequency tolerance is  $400 \text{ Hz} \pm 2$  percent.

## 6.0 DATA

| FREQUENCY<br>[MHz] | OUTPUT POWER [dBm] |           |           |
|--------------------|--------------------|-----------|-----------|
|                    | CHANNEL 1          | CHANNEL 2 | CHANNEL 3 |
| 1626.7225          | 43.70              | 43.60     | 43.20     |
| 1643.6075          | 44.00              | 44.00     | 44.00     |
| 1659.9865          | 42.30              | 43.40     | 43.00     |

TEST PERFORMED BY:



DATE: 6-12-98

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

25  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 1

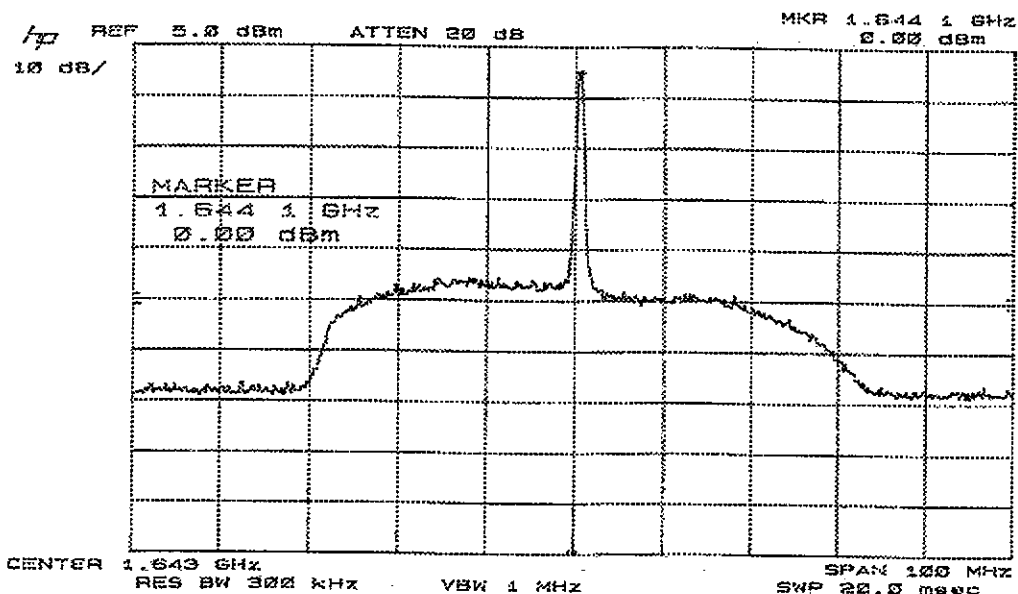


Figure 6-1. Channel 1 Power Output Mid Band

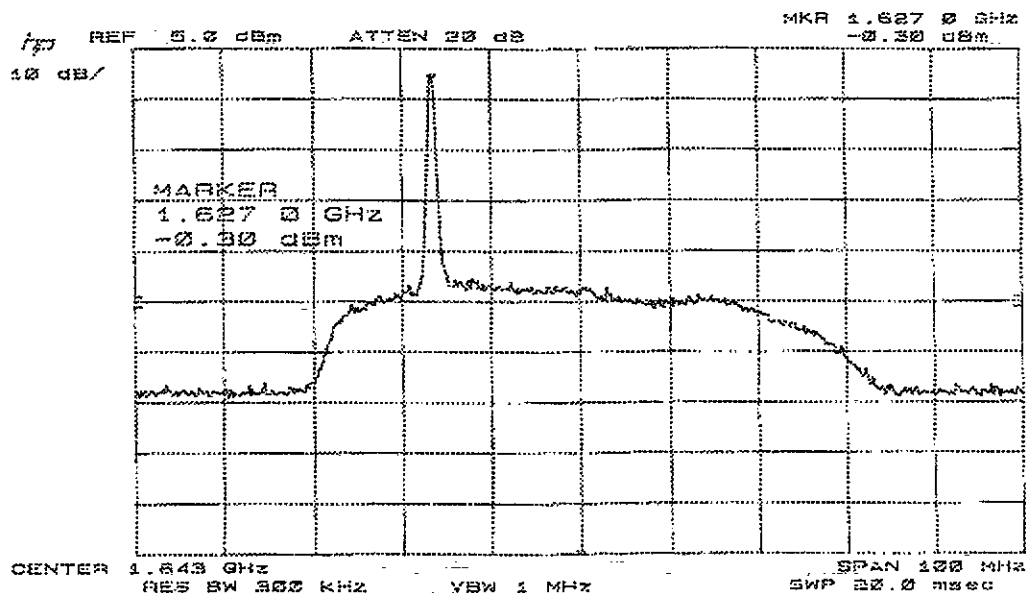


Figure 6-2. Channel 1 Power Output Low Band

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

26  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 1

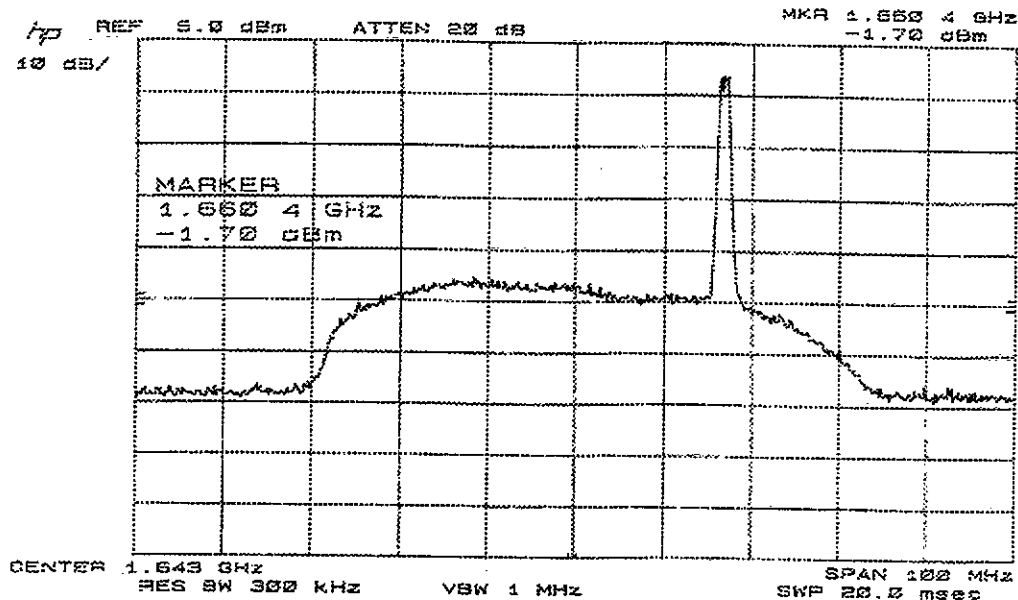


Figure 6-3. Channel 1 Power Output High Band

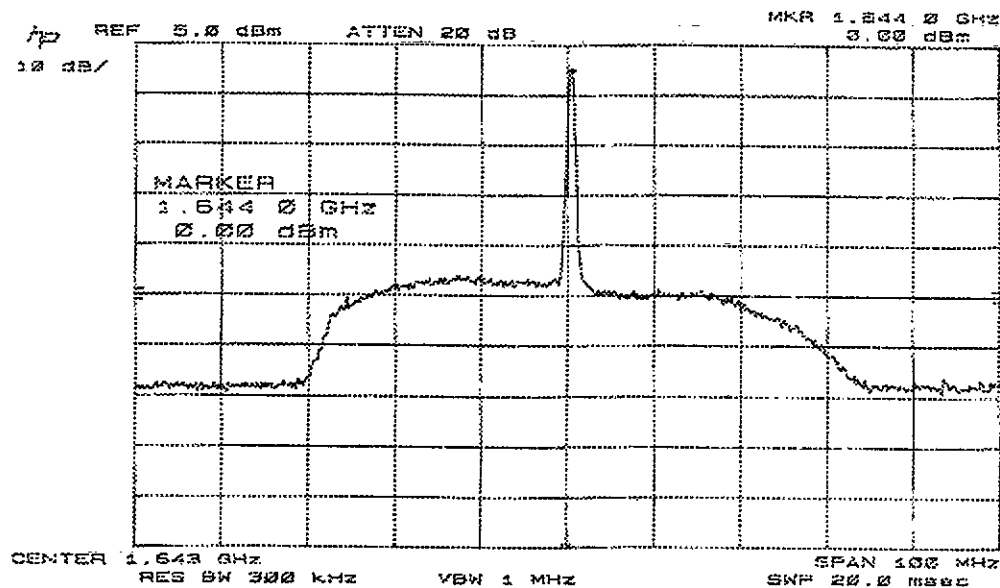


Figure 6-4. Channel 2 Power Output Mid Band

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

27  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 1

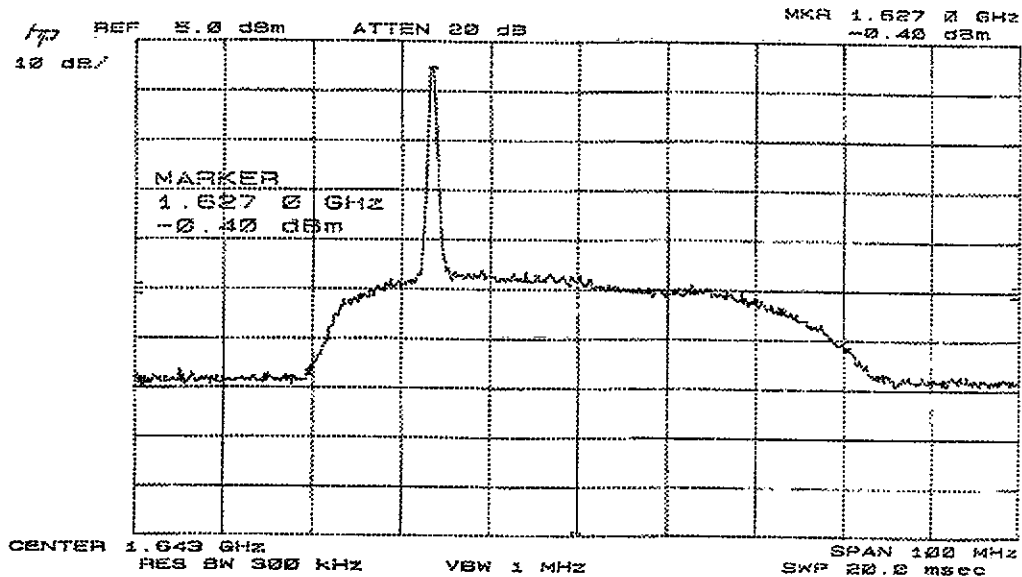


Figure 6-5. Channel 2 Power Output Low Band

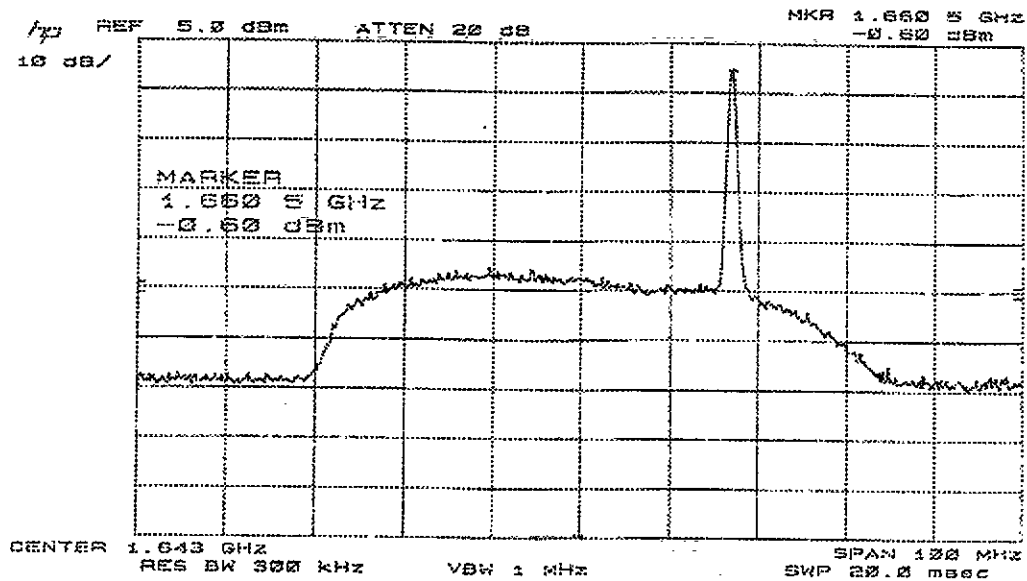


Figure 6-6. Channel 2 Power Output High Band

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

28  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 1

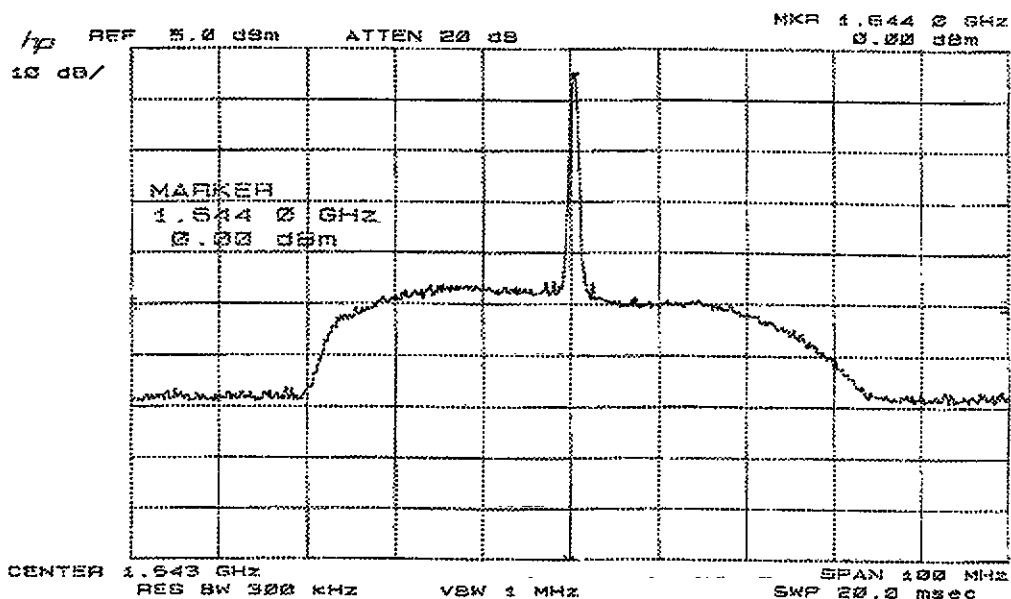


Figure 6-7. Channel 3 Power Output Mid Band

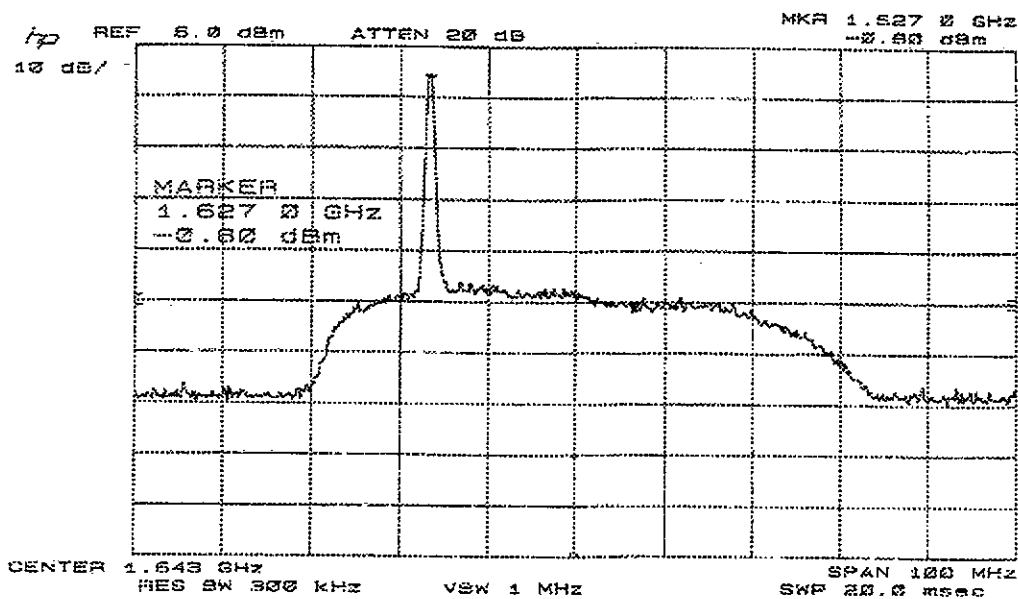


Figure 6-8. Channel 3 Power Output Low Band

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

29  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 1

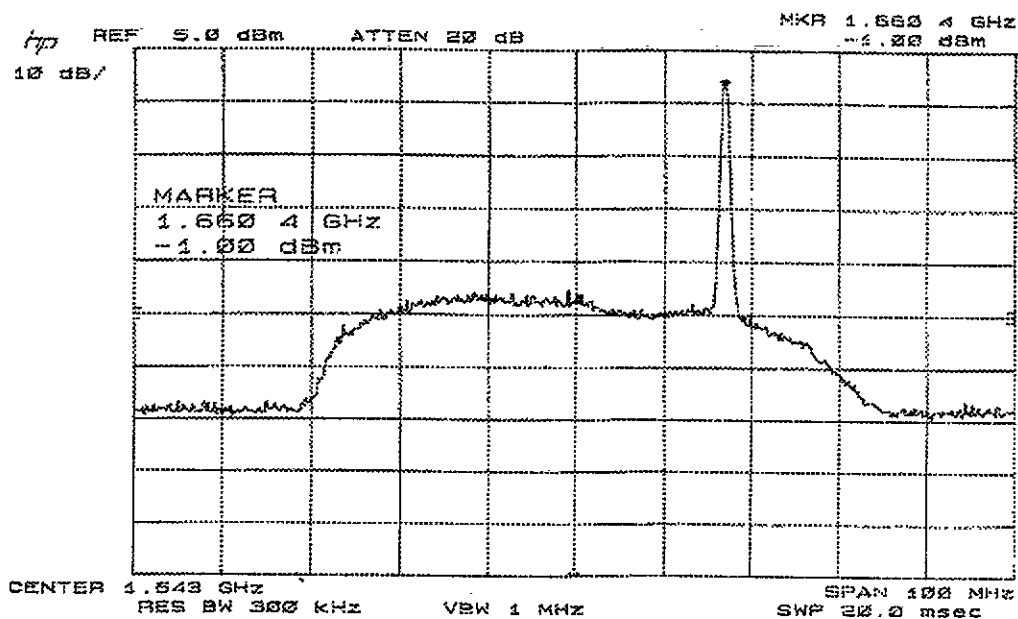


Figure 6-9. Channel 3 Power Output High Band

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

30  
PAGE

|                                                       |                                                               |  |                                                       |                                                                               |
|-------------------------------------------------------|---------------------------------------------------------------|--|-------------------------------------------------------|-------------------------------------------------------------------------------|
| <h1 style="margin: 0;">ENGINEERING SPECIFICATION</h1> | SECURITY NOTATION                                             |  | SPEC NO. <span style="float: right;">EB7516254</span> | <small>SEE PAGE INDEX FOR THIS SHEET<br/>REV LETTER</small><br><b>REV LTR</b> |
|                                                       |                                                               |  | CAGE CODE <span style="float: right;">55939</span>    |                                                                               |
|                                                       | SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS. |  |                                                       |                                                                               |

| REV LTR | <div style="display: flex; justify-content: space-between;"> <div>TEST PROCEDURES AND DATA:</div> <div>TEST NO: 2</div> </div><br><div>1.0 DESCRIPTION OF TEST: <u>Frequency Stability (Temperature)</u></div><br><div>2.0 SPECIFICATIONS: <u>47 CFR 87.133</u><br/><u>47 CFR 2.995a</u></div><br><div>3.0 EQUIPMENT REQUIRED:</div><br><table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 35%; text-align: left;"><u>TYPE</u></th> <th style="width: 25%; text-align: left;"><u>MANUFACTURER</u></th> <th style="width: 20%; text-align: left;"><u>MODEL</u></th> <th style="width: 15%; text-align: left;"><u>SER. NO.</u></th> </tr> </thead> <tbody> <tr><td>A</td><td>High Power Amplifier</td><td>Honeywell</td><td>HP700</td><td>97110006</td></tr> <tr><td>B</td><td>Satellite Data Unit</td><td>Honeywell</td><td>SD600</td><td>95040674</td></tr> <tr><td>C</td><td>Microwave Counter</td><td>Hewlett Packard</td><td>5361A</td><td>AV55635</td></tr> <tr><td>D</td><td>20 dB Attenuator</td><td>Narda</td><td>757-20</td><td>-</td></tr> <tr><td>E</td><td>Directional Coupler</td><td>Narda</td><td>3242B-20</td><td>-</td></tr> <tr><td>F</td><td>Terminal (PC)</td><td>Dell w/Procom</td><td>-</td><td>-</td></tr> <tr><td>G</td><td>20 dB Attenuator</td><td>Narda</td><td>756-20</td><td>-</td></tr> <tr><td>H</td><td>20 dB Attenuator</td><td>Narda</td><td>756-20</td><td>-</td></tr> <tr><td>I</td><td>20 dB Attenuator</td><td>Narda</td><td>766-20</td><td>-</td></tr> <tr><td>J</td><td>Power Meter</td><td>Hewlett Packard</td><td>435B</td><td>AV53490</td></tr> <tr><td>K</td><td>Diplexer/LNA</td><td>Com Atlantic</td><td>P/N 103624</td><td>S/N 1690116</td></tr> </tbody> </table> |                     | <u>TYPE</u>  | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u> | A | High Power Amplifier | Honeywell | HP700 | 97110006 | B | Satellite Data Unit | Honeywell | SD600 | 95040674 | C | Microwave Counter | Hewlett Packard | 5361A | AV55635 | D | 20 dB Attenuator | Narda | 757-20 | - | E | Directional Coupler | Narda | 3242B-20 | - | F | Terminal (PC) | Dell w/Procom | - | - | G | 20 dB Attenuator | Narda | 756-20 | - | H | 20 dB Attenuator | Narda | 756-20 | - | I | 20 dB Attenuator | Narda | 766-20 | - | J | Power Meter | Hewlett Packard | 435B | AV53490 | K | Diplexer/LNA | Com Atlantic | P/N 103624 | S/N 1690116 |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------|---------------------|--------------|-----------------|---|----------------------|-----------|-------|----------|---|---------------------|-----------|-------|----------|---|-------------------|-----------------|-------|---------|---|------------------|-------|--------|---|---|---------------------|-------|----------|---|---|---------------|---------------|---|---|---|------------------|-------|--------|---|---|------------------|-------|--------|---|---|------------------|-------|--------|---|---|-------------|-----------------|------|---------|---|--------------|--------------|------------|-------------|
|         | <u>TYPE</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u>     |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| A       | High Power Amplifier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Honeywell           | HP700        | 97110006            |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| B       | Satellite Data Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Honeywell           | SD600        | 95040674            |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| C       | Microwave Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Hewlett Packard     | 5361A        | AV55635             |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| D       | 20 dB Attenuator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Narda               | 757-20       | -                   |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| E       | Directional Coupler                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Narda               | 3242B-20     | -                   |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| F       | Terminal (PC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Dell w/Procom       | -            | -                   |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| G       | 20 dB Attenuator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Narda               | 756-20       | -                   |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| H       | 20 dB Attenuator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Narda               | 756-20       | -                   |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| I       | 20 dB Attenuator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Narda               | 766-20       | -                   |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| J       | Power Meter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Hewlett Packard     | 435B         | AV53490             |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |
| K       | Diplexer/LNA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Com Atlantic        | P/N 103624   | S/N 1690116         |              |                 |   |                      |           |       |          |   |                     |           |       |          |   |                   |                 |       |         |   |                  |       |        |   |   |                     |       |          |   |   |               |               |   |   |   |                  |       |        |   |   |                  |       |        |   |   |                  |       |        |   |   |             |                 |      |         |   |              |              |            |             |

|                                       |                      |             |            |
|---------------------------------------|----------------------|-------------|------------|
| <h1 style="margin: 0;">Honeywell</h1> | AW/CRITICAL NOTATION |             |            |
|                                       | SECURITY NOTATION    | SUPPLEMENTS | 31<br>PAGE |

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER.

REV LTR

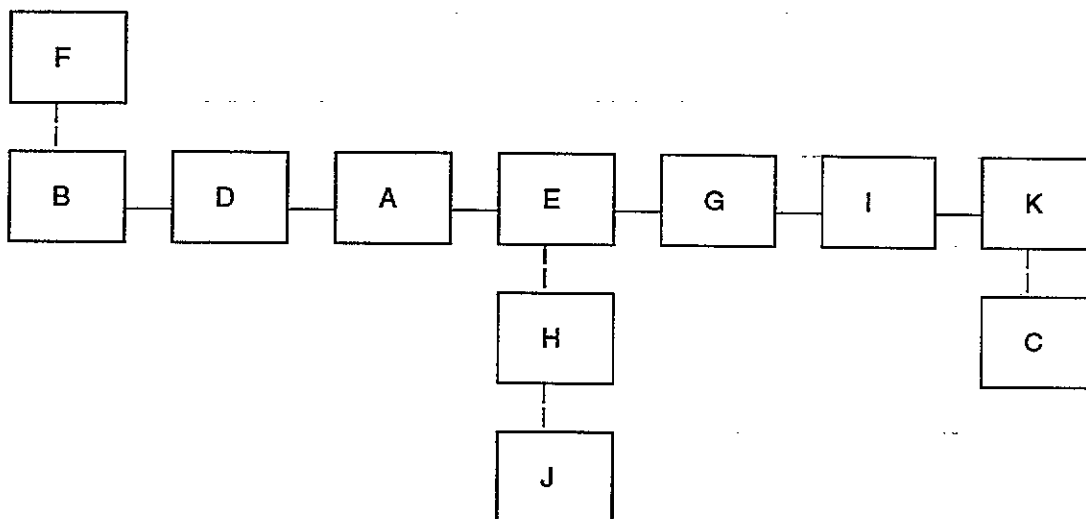
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 2

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

32  
PAGE

|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |             |                       |            |                                                               |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------|-----------------------|------------|---------------------------------------------------------------|
| <b>ENGINEERING<br/>SPECIFICATION</b>                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SECURITY NOTATION    |             | SPEC<br>NO. EB7516254 |            | SEE PAGE INDEX<br>FOR THIS SHEET<br>REV LETTER<br><br>REV LTR |
|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |             | CAGE<br>CODE 55939    |            |                                                               |
| SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |             |                       |            |                                                               |
| REV<br>LTR                                                    | <p>TEST PROCEDURES AND DATA: <span style="float: right;">TEST NO: 2</span></p> <p>5.0 PROCEDURE:</p> <ol style="list-style-type: none"> <li>1. Connect the equipment with the exception of the frequency counter as shown in the block diagram in Section 4.0 of test number 2.</li> <li>2. Using the terminal set the SDU back-off attenuator to 0 dB. (This is the nominal back-off setting.)</li> <li>3. Using the terminal set the SDU to transmit a CW carrier on channel 1 at 1643.5 MHz.</li> <li>4. Using the terminal set the HPA back-off attenuator for -3.5 dBm amplitude on the power meter. (This corresponds to 5W output power at the HPA RF port).</li> <li>5. Connect the frequency counter as shown in section 4.0 of test number 2.</li> <li>6. Feeding a LORAN-C generated 10 MHz signal to the external reference input of the Microwave Frequency Counter (Equipment "E") measure the output frequency.</li> <li>7. Repeat steps 3 and 4 with 1626.5 and 1660.5 MHz frequencies selected.</li> <li>8. Repeat steps 3, 4 and 5 at -55 °C and at +70 °C.</li> </ol> |                      |             |                       |            |                                                               |
| <b>Honeywell</b>                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AW/CRITICAL NOTATION |             |                       |            |                                                               |
|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SECURITY NOTATION    | SUPPLEMENTS |                       | 33<br>PAGE |                                                               |



# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTERCAGE  
CODE

55939

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR**TEST PROCEDURES AND DATA:**

TEST NO: 3

1.0 DESCRIPTION OF TEST: Frequency Stability (input power)

2.0 SPECIFICATIONS: 47 CFR 87.133

47 CFR 2.995a

**3.0 EQUIPMENT REQUIRED:**

|   | <u>TYPE</u>          | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u> |
|---|----------------------|---------------------|--------------|-----------------|
| A | High Power Amplifier | Honeywell           | HP700        | 97110006        |
| B | Satellite Data Unit  | Honeywell           | SD600        | 93040109        |
| C | Power Meter          | Hewlett Packard     | 435B         | AV53490         |
| D | Directional Coupler  | Narda               | 3242B-20     | -               |
| E | Terminal (PC)        | Dell w/Procom       | -            | -               |
| F | Power Supply         | Invertron           | 1501         | -               |
| G | 20 dB Attenuator     | Narda               | 757-20       | -               |
| H | 20 dB Attenuator     | Narda               | 766-20       | -               |
| I | 20 dB Attenuator     | Narda               | 765-20       | -               |
| J | 20 dB Attenuator     | Narda               | 765-20       | -               |
| K | Diplexer/LNA         | COM Atlantic        | P/N 103624   | S/N 1690116     |
| L | 3 dB Attenuator      | Narda               | 768-3        | -               |
| M | 3 dB Attenuator      | Narda               | 768-3        | -               |
| N | Microwave Counter    | Hewlett Packard     | 5361A        | AV55635         |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

35  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

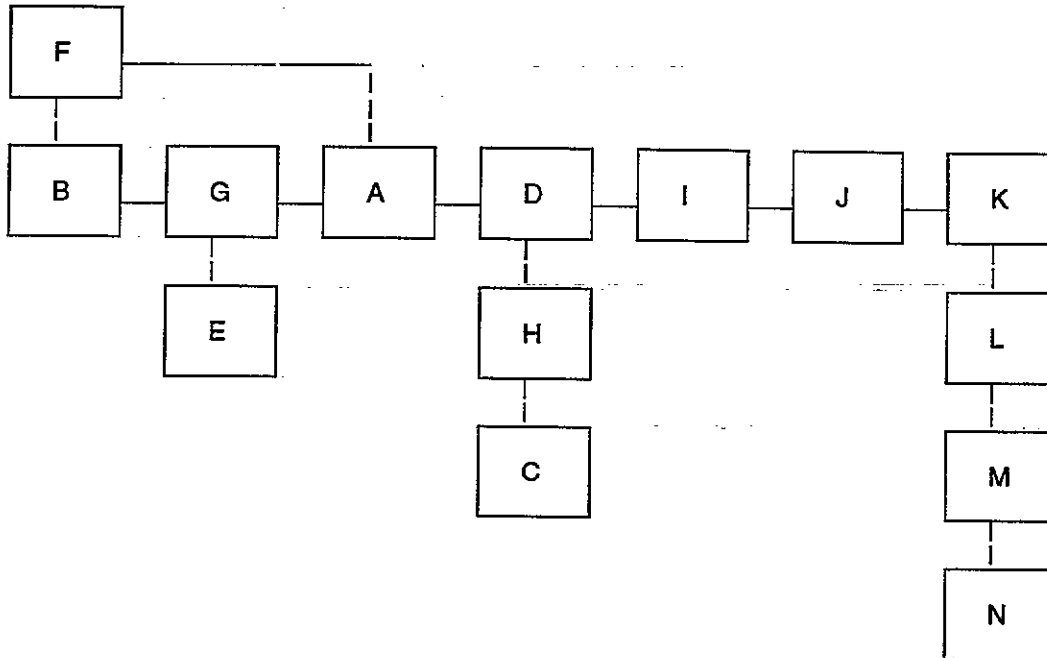
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 3

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

36  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

## TEST PROCEDURES AND DATA:

TEST NO: 3

### 5.0 PROCEDURE:

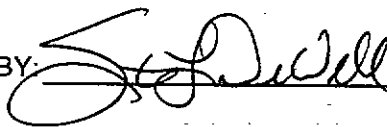
Frequency versus input power voltage and frequency:

1. Connect the equipment with the exception of the frequency counter as shown in the block diagram in Section 4.0 of test number 3.
2. Using the terminal set the SDU back-off attenuator to 0 dB. (This is the nominal back-off setting.)
3. Using the terminal set the SDU to transmit a CW carrier on channel 1 at 1643.5 MHz.
4. Using the terminal set the HPA back-off attenuator to produce -3.5 dBm amplitude on the power meter. (This corresponds to 5 W output power at the HPA RF port).
5. Connect back the frequency counter as shown in section 4.0 of test number 3.
6. Feeding a LORAN-C generated 10 MHz signal to the external reference input of the Microwave Frequency Counter (equipment "E") measure the output frequency with the input voltages and frequencies shown below.
7. Repeat the procedure for channel two and three. Frequencies selected.

### 6.0 DATA

| POWER SUPPLY<br>VOLT. [V <sub>RMS</sub> ] | POWER SUPPLY<br>FREQ. [Hz] | FREQUENCY [Hz] |              |              |
|-------------------------------------------|----------------------------|----------------|--------------|--------------|
|                                           |                            | CHANNEL 1      | CHANNEL 2    | CHANNEL 3    |
| 103.5                                     | 392                        | 1643 499 947   | 1643 499 947 | 1643 499 947 |
| 103.5                                     | 408                        | 1643 499 949   | 1643 499 949 | 1643 499 949 |
| 126.5                                     | 392                        | 1643 499 949   | 1643 499 949 | 1643 499 949 |
| 126.5                                     | 408                        | 1643 499 950   | 1643 499 950 | 1643 499 950 |

TEST PERFORMED BY:



DATE: 6-12-98

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

37  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR**TEST PROCEDURES AND DATA:**

TEST NO: 4

1.0 DESCRIPTION OF TEST: Occupied Bandwidth2.0 SPECIFICATIONS: 47 CFR 87.1337  
47 CFR 2.989

## 3.0 EQUIPMENT REQUIRED:

|   | <u>TYPE</u>          | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u> |
|---|----------------------|---------------------|--------------|-----------------|
| A | High Power Amplifier | Honeywell           | HP700        | 97110006        |
| B | Satellite Data Unit  | Honeywell           | SD600        | 95040674        |
| C | 20 dB Attenuator     | Narda               | 757-20       | -               |
| D | Spectrum Analyzer    | Hewlett Packard     | 8566B        | AV55142         |
| E | Power Meter          | Hewlett Packard     | 438B         | AV53490         |
| F | Directional Coupler  | Narda               | 3242B-20     | -               |
| G | Terminal (PC)        | Dell w/ Procom      | -            | -               |
| H | 20 dB Attenuator     | Narda               | 766-20       | -               |
| I | 30 dB Attenuator     | Weinschel Eng.      | 4830-33      | -               |
| J | Diplexer/LNA         | Com Atlantic        | P/N 103624   | S/N 1690116     |
| K | Plotter              | Hewlett Packard     | 7475A        | AV58285         |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

38  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

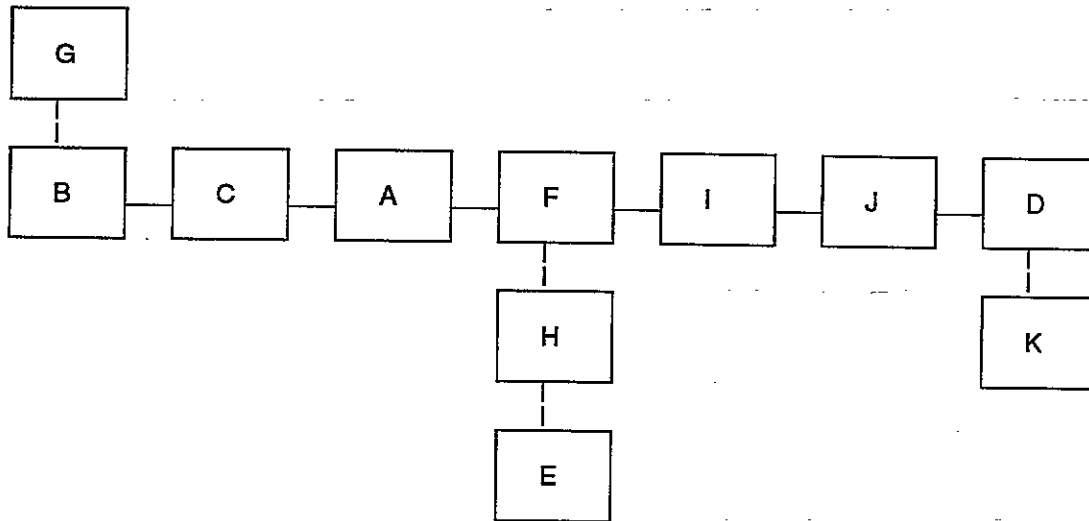
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

39  
PAGE

|                                                           |                                                               |                                                                                                             |                                                               |
|-----------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <h1 style="margin: 0;">ENGINEERING<br/>SPECIFICATION</h1> | SECURITY NOTATION                                             | SPEC NO. <span style="float: right;">EB7516254</span><br>CAGE CODE <span style="float: right;">55939</span> | SEE PAGE INDEX<br>FOR THIS SHEET<br>REV LETTER<br><br>REV LTR |
|                                                           | SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS. |                                                                                                             |                                                               |
|                                                           |                                                               |                                                                                                             |                                                               |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REV<br>LTR | <div style="display: flex; justify-content: space-between;"> <div>TEST PROCEDURES AND DATA:</div> <div>TEST NO: 4</div> </div> <div style="margin-top: 10px;"> <p>5.0 PROCEDURE:</p> <ol style="list-style-type: none"> <li>1. Set the spectrum analyzer to 100 kHz span, 1643.5 MHz center frequency, 10 dB/division, 1 kHz resolution BW and 30 kHz video bandwidth.</li> <li>2. Connect the equipment as shown in block diagram in Section 4 of test number 4.</li> <li>3. Using the terminal set the SDU back-off attenuator to 0 dB. (This is the nominal back-off setting.)</li> <li>4. Using the terminal set the SDU to transmit a CW carrier on channel 1 at 1643.5 MHz.</li> <li>5. Using the terminal set the HPA back-off attenuator to produce 3.5 dBm on the power meter. This level equals 25.1 W at the HPA RF antenna port.</li> <li>6. Using the terminal, set the SDU to transmit a 1643.5 MHz on C-Channel (21 kps). This will yield the widest bandwidth in the transmit spectrum due to the highest bit rate.</li> </ol> <p>Capture the spectrum analyzers display and with numerical integration calculate the energy distribution.</p> <p>The results of the integration is shown on the page following the spectrum of the signal. The frequency column indicated the frequency distance from the spectrum center. P/L [dBm] column lists the amplitude in the lower band (i.e. below the center), while P/U [dBm] is for the upper band. The "% Power in band" column shows the power distribution in percent for the total power in the frequency band.</p> <p>First spectrum: Channel 1, C-Channel, 21 kbps, 25.1</p> <p>Second spectrum: Channel 1, P-Channel, 600 bps, 25.1</p> <p>Third spectrum: Channel 1, P-Channel, 12 kbps, 25.1</p> <p>Fourth spectrum: Channel 1, P-Channel, 10.5 kbps, 25.1</p> <p>Frequency for all conditions: 1643.5</p> </div> <div style="margin-top: 20px;"> <p>6.0 DATA</p> <p>The data is presented on the following pages of this test:</p> <p>Limit: 25 kHz</p> </div> |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                       |                      |             |            |
|---------------------------------------|----------------------|-------------|------------|
| <h1 style="margin: 0;">Honeywell</h1> | AW/CRITICAL NOTATION |             |            |
|                                       | SECURITY NOTATION    | SUPPLEMENTS | 40<br>PAGE |

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

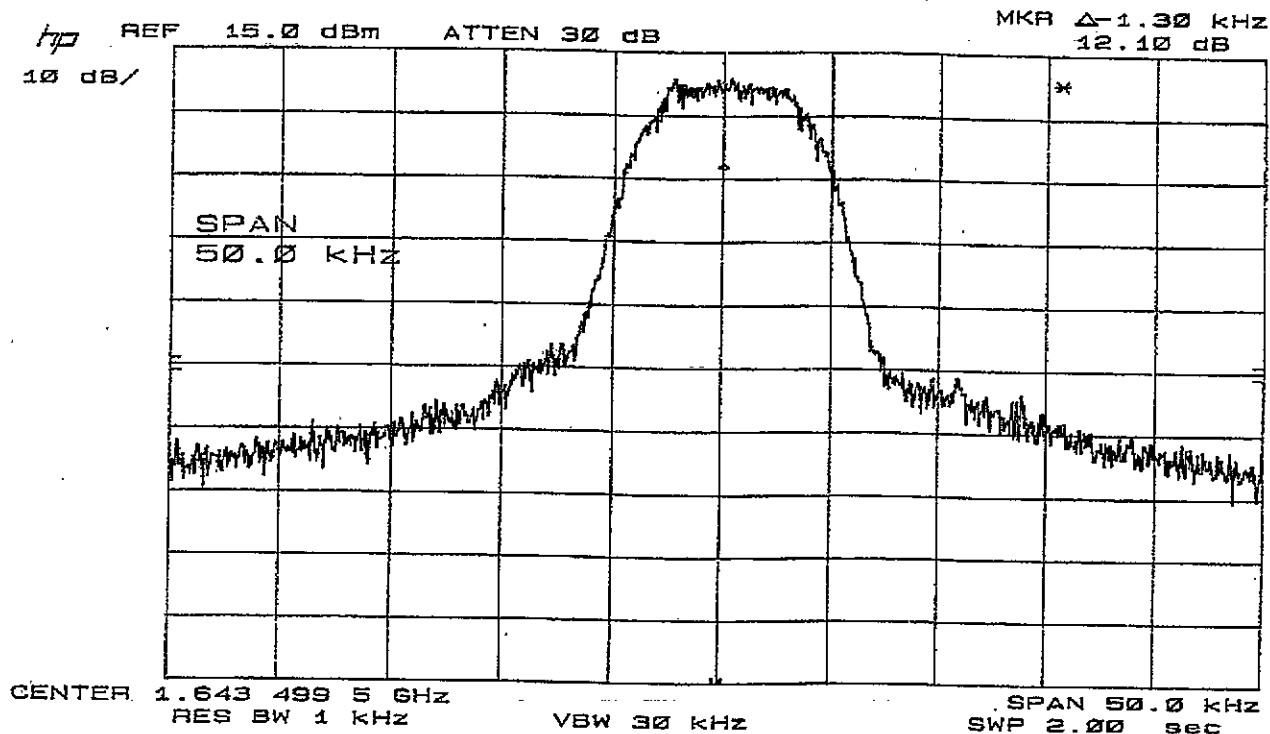


Figure 6-10. Channel 1, C-Channel, 21 kbps, 25.1 W

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

41  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTERCAGE  
CODE

55939

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

**Channel 1, C Channel, 21 kbps, 25.1 Watts****FREQUENCY FROM CENTER  
AND POWER LEVELS****FREQUENCY FROM CENTER AND  
POWER LEVELS**

| kHz | P/U<br>(dBm) | P/L<br>(dBm) | % P  | kHz | P/U<br>(dBm) | P/L<br>(dBm) | % P |
|-----|--------------|--------------|------|-----|--------------|--------------|-----|
| ±0  | 6.8          | 6.8          | -    | ±36 | -53.5        | -54.4        | 100 |
| ±1  | 6.6          | 6.8          | 2.1  | ±37 | -53.3        | -52.8        | 100 |
| ±2  | 7.4          | 7.6          | 22.2 | ±38 | -54.5        | -54.4        | 100 |
| ±3  | 5.2          | 6.2          | 46.2 | ±39 | -53.7        | -56.1        | 100 |
| ±4  | 3.7          | 5.4          | 62.2 | ±40 | -54.4        | -52.5        | 100 |
| ±5  | 3.9          | 2.0          | 74.7 | ±41 | -53.5        | -54.5        | 100 |
| ±6  | 1.7          | 4.0          | 83.3 | ±42 | -55.0        | -55.5        | 100 |
| ±7  | 1.0          | 0.0          | 91.8 | ±43 | -54.8        | -54.3        | 100 |
| ±8  | -2.1         | -4.7         | 96.7 | ±44 | -53.4        | -55.8        | 100 |
| ±9  | -7.4         | -4.4         | 98.7 | ±45 | -54.7        | -54.9        | 100 |
| ±10 | -17.4        | -15.7        | 99.9 | ±46 | -55.8        | -54.5        | 100 |
| ±11 | -33.4        | -26.0        | 100  | ±47 | -52.8        | -55.9        | 100 |
| ±12 | -41.4        | -27.7        | 100  | ±48 | -54.1        | -54.7        | 100 |
| ±13 | -42.9        | -40.8        | 100  | ±49 | -54.2        | -53.7        | 100 |
| ±14 | -42.9        | -39.8        | 100  |     |              |              |     |
| ±15 | -43.7        | -40.6        | 100  |     |              |              |     |
| ±16 | -43.4        | -40.0        | 100  |     |              |              |     |
| ±17 | -43.4        | -40.4        | 100  |     |              |              |     |
| ±18 | -45.3        | -42.5        | 100  |     |              |              |     |
| ±19 | -46.1        | -44.3        | 100  |     |              |              |     |
| ±20 | -46.2        | -46.1        | 100  |     |              |              |     |
| ±21 | -45.1        | -44.4        | 100  |     |              |              |     |
| ±22 | -45.9        | -45.9        | 100  |     |              |              |     |
| ±23 | -47.4        | -46.3        | 100  |     |              |              |     |
| ±24 | -48.1        | -48.6        | 100  |     |              |              |     |
| ±25 | -50.2        | -48.6        | 100  |     |              |              |     |
| ±26 | -49.4        | -50.1        | 100  |     |              |              |     |
| ±27 | -50.8        | -51.4        | 100  |     |              |              |     |
| ±28 | -51.2        | -49.0        | 100  |     |              |              |     |
| ±29 | -51.6        | -50.8        | 100  |     |              |              |     |
| ±30 | -54.6        | -52.2        | 100  |     |              |              |     |
| ±31 | -49.8        | -53.2        | 100  |     |              |              |     |
| ±32 | -52.7        | -52.4        | 100  |     |              |              |     |
| ±33 | -53.8        | -51.5        | 100  |     |              |              |     |
| ±34 | -53.8        | -52.1        | 100  |     |              |              |     |
| ±35 | -55.5        | -53.2        | 100  |     |              |              |     |

TEST PERFORMED BY:



DATE:

6-12-95

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

42  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

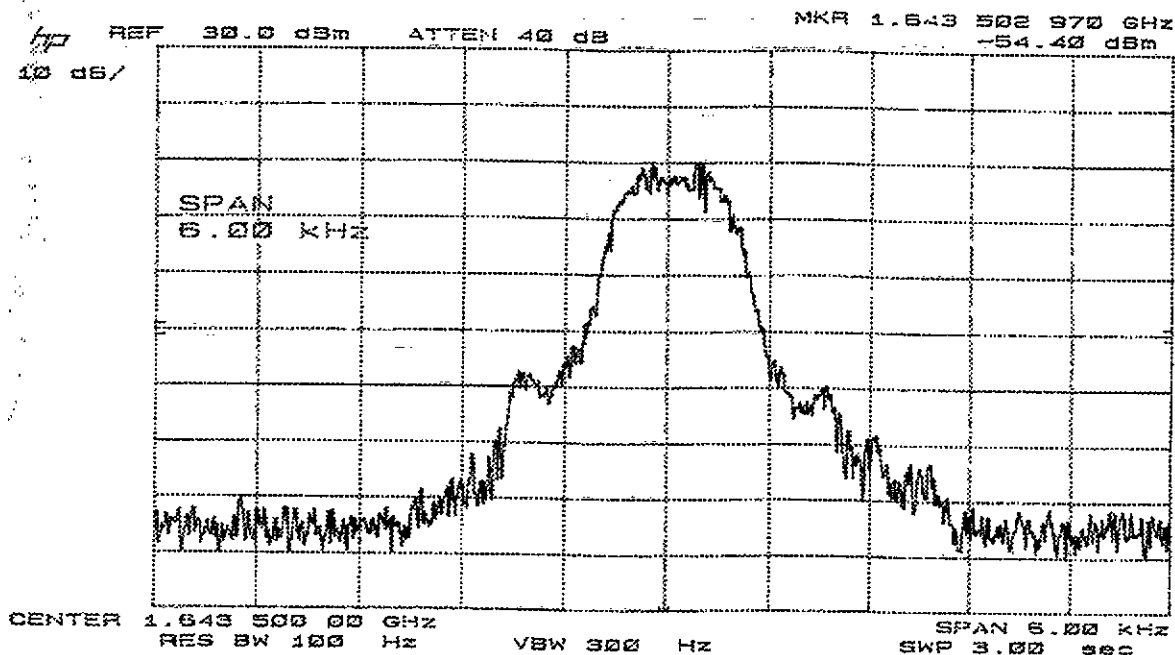


Figure 6-11. Channel 1, P-Channel, 600 bps, 25.1 W

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

43  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTERCAGE  
CODE

55939

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

**Channel 1, P Channel, 600bps, 25.1 Watts**

| <u>FREQUENCY FROM CENTER</u><br><u>(Hz)</u> | <u>P/U(dBm)</u> | <u>P/L(dBm)</u> | <u>% POWER</u><br><u>IN BAND</u> |
|---------------------------------------------|-----------------|-----------------|----------------------------------|
| ±0                                          | 6.5             | 6.5             | -                                |
| ±120                                        | 6.4             | 5.1             | 4.8                              |
| ±240                                        | 8.3             | 4.5             | 41.7                             |
| ±360                                        | 3.0             | -5.0            | 88.1                             |
| ±480                                        | -9.4            | -18.7           | 99.3                             |
| ±600                                        | -24.6           | -26.5           | 99.9                             |
| ±720                                        | -31.0           | -31.8           | 100                              |
| ±840                                        | -34.6           | -27.6           | 100                              |
| ±960                                        | -31.3           | -46.7           | 100                              |
| ±1080                                       | -37.6           | -47.1           | 100                              |
| ±1200                                       | -42.2           | -47.6           | 100                              |
| ±1320                                       | -49.1           | -50.8           | 100                              |
| ±1440                                       | -46.5           | -48.4           | 100                              |
| ±1560                                       | -43.9           | -56.4           | 100                              |
| ±1680                                       | -52.4           | -53.1           | 100                              |
| ±1800                                       | -52.8           | -55.3           | 100                              |
| ±1920                                       | -52.8           | -56.6           | 100                              |
| ±1040                                       | -57.5           | -55.9           | 100                              |
| ±2160                                       | -53.4           | -53.4           | 100                              |
| ±2250                                       | -51.4           | -54.0           | 100                              |
| ±2400                                       | -56.0           | -54.7           | 100                              |
| ±2520                                       | -53.8           | -51.4           | 100                              |
| ±2640                                       | -52.1           | -56.2           | 100                              |
| ±2760                                       | -56.0           | -56.5           | 100                              |
| ±2880                                       | -53.2           | -54.7           | 100                              |
| ±3000                                       | -53.4           | -53.0           | 100                              |

TEST PERFORMED BY: 

DATE: 6-12-98

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

44  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

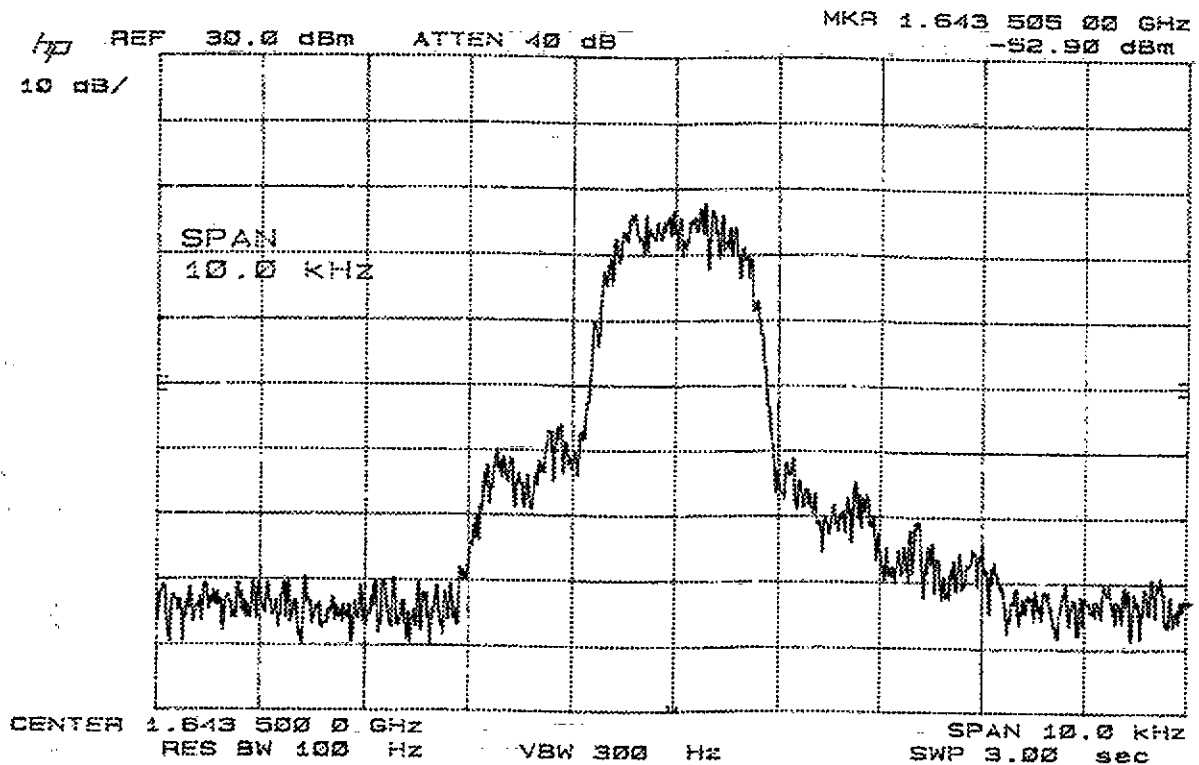


Figure 6-12. Channel 1, P-Channel, 12 kbps, 25.1 W

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

45  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTERCAGE  
CODE

55939

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

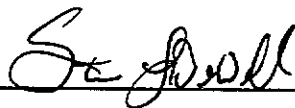
TEST PROCEDURES AND DATA:

TEST NO: 4

**Channel 1, P Channel, 12kpbs, 25.1 Watts**

| <u>FREQUENCY FROM<br/>CENTER (kHz)</u> | <u>P/U (dBm)</u> | <u>P/L (dBm)</u> | <u>% POWER IN<br/>BAND</u> |
|----------------------------------------|------------------|------------------|----------------------------|
| ±0                                     | 3.1              | 3.1              | -                          |
| ±0.2                                   | 5.5              | 2.4              | 6.6                        |
| ±0.4                                   | 3.3              | 5.8              | 41.2                       |
| ±0.6                                   | 3.3              | -1.8             | 80.1                       |
| ±0.8                                   | -7.1             | -13.8            | 98.4                       |
| ±1.0                                   | -33.0            | -32.9            | 100                        |
| ±1.2                                   | -38.1            | -27.3            | 100                        |
| ±1.4                                   | -40.9            | -38.1            | 100                        |
| ±1.6                                   | -42.4            | -33.7            | 100                        |
| ±1.8                                   | -37.8            | -32.7            | 100                        |
| ±2.0                                   | -42.7            | -47.7            | 100                        |
| ±2.2                                   | -45.2            | -53.0            | 100                        |
| ±2.4                                   | -40.9            | -52.2            | 100                        |
| ±2.6                                   | -49.7            | -57.5            | 100                        |
| ±2.8                                   | -46.0            | -50.8            | 100                        |
| ±3.0                                   | -46.5            | -56.5            | 100                        |
| ±3.2                                   | -51.4            | -56.6            | 100                        |
| ±3.4                                   | -55.1            | -57.5            | 100                        |
| ±3.6                                   | -52.7            | -59.6            | 100                        |
| ±3.8                                   | -52.2            | -55.6            | 100                        |
| ±4.0                                   | -33.1            | -50.4            | 100                        |
| ±4.2                                   | -50.5            | -50.7            | 100                        |
| ±4.4                                   | -50.8            | -52.1            | 100                        |
| ±4.6                                   | -57.0            | -54.1            | 100                        |
| ±4.8                                   | -56.1            | -53.4            | 100                        |
| ±5.0                                   | -52.9            | -54.7            | 100                        |

TEST PERFORMED BY:



DATE:

6-12-98

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

46  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

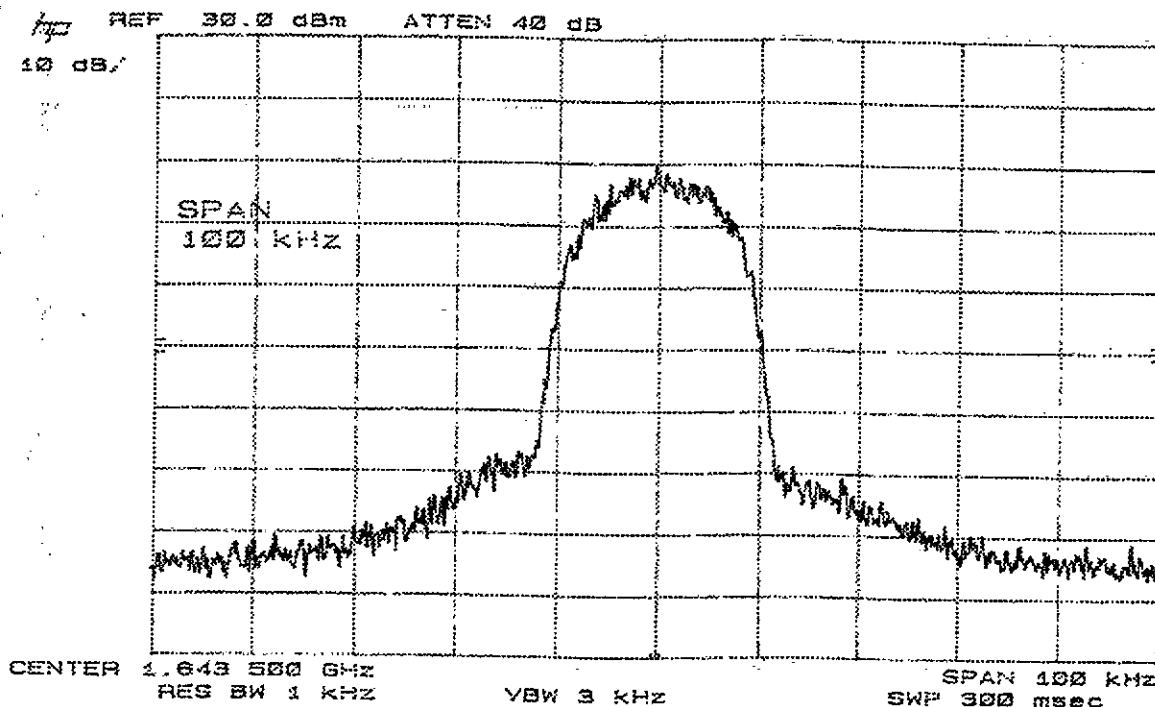


Figure 6-13. Channel 1, R-Channel, 10.5 kbps, 25.1 W

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

47  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTERCAGE  
CODE

55939

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 4

**P Channel 10.5 kbps, 25.1 Watts**

| <u>FREQUENCY FROM<br/>CENTER (Hz)</u> | <u>P/U<br/>(dBm)</u> | <u>P/L<br/>(dBm)</u> | <u>% POWER IN<br/>BAND</u> |
|---------------------------------------|----------------------|----------------------|----------------------------|
| ±0                                    | 0.0                  | 0.0                  | -                          |
| ±1000                                 | -1.2                 | -1.1                 | 20.0                       |
| ±2000                                 | -1.7                 | -1.5                 | 50.6                       |
| ±3000                                 | -4.4                 | -3.4                 | 78.2                       |
| ±4000                                 | -10.1                | -8.6                 | 94.6                       |
| ±5000                                 | -17.3                | -17.9                | 99.3                       |
| ±6000                                 | -32.4                | -32.2                | 100                        |
| ±7000                                 | -43.8                | -41.2                | 100                        |
| ±8000                                 | -44.2                | -44.4                | 100                        |
| ±9000                                 | -48.9                | -46.9                | 100                        |
| ±10000                                | -49.4                | -49.4                | 100                        |
| ±11000                                | -49.7                | -50.2                | 100                        |
| ±12000                                | -52.0                | -53.3                | 100                        |
| ±13000                                | -54.2                | -55.9                | 100                        |
| ±14000                                | -56.4                | -54.7                | 100                        |
| ±15000                                | -54.6                | -54.6                | 100                        |
| ±16000                                | -57.3                | -59.4                | 100                        |
| ±17000                                | -55.8                | -57.7                | 100                        |
| ±18000                                | -58.3                | -59.7                | 100                        |
| ±19000                                | -58.8                | -55.9                | 100                        |
| ±20000                                | -59.3                | -60.0                | 100                        |
| ±21000                                | -60.7                | -58.6                | 100                        |
| ±22000                                | -61.3                | -60.6                | 100                        |
| ±23000                                | -59.9                | -60.0                | 100                        |
| ±24000                                | -61.1                | -60.5                | 100                        |
| ±25000                                | -58.6                | -61.5                | 100                        |

TEST PERFORMED BY:

DATE: 6-12-98

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

48  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR**TEST PROCEDURES AND DATA:**

TEST NO: 5

1.0 DESCRIPTION OF TEST: Conducted Spurious emission (100 kHz and 18 GHz)

2.0 SPECIFICATIONS: 47 CFR 87.139

47 CFR 2.991

47 CFR 2.993

## 3.0 EQUIPMENT REQUIRED:

|   | <u>TYPE</u>          | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u> |
|---|----------------------|---------------------|--------------|-----------------|
| A | High Power Amplifier | Honeywell           | HP700        | 97110006        |
| B | Satellite Data Unit  | Honeywell           | SD600        | 95040674        |
| C | 20 dB Attenuator     | Narda               | 757-20       | -               |
| D | Spectrum Analyzer    | Hewlett Packard     | 8566B        | AV55142         |
| E | Power Meter          | Hewlett Packard     | 438B         | AV53490         |
| F | Directional Coupler  | Narda               | 3242B-20     | -               |
| G | Terminal (PC)        | Dell w/ Procom      | -            | -               |
| H | 20 dB Attenuator     | Narda               | 766-20       | -               |
| I | 30 dB Attenuator     | Weinschel Eng.      | 4830-33      | -               |
| J | Diplexer/LNA         | Com Atlantic        | P/N 103624   | S/N 1690116     |
| K | Plotter              | Hewlett Packard     | 7475A        | AV58285         |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

49  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

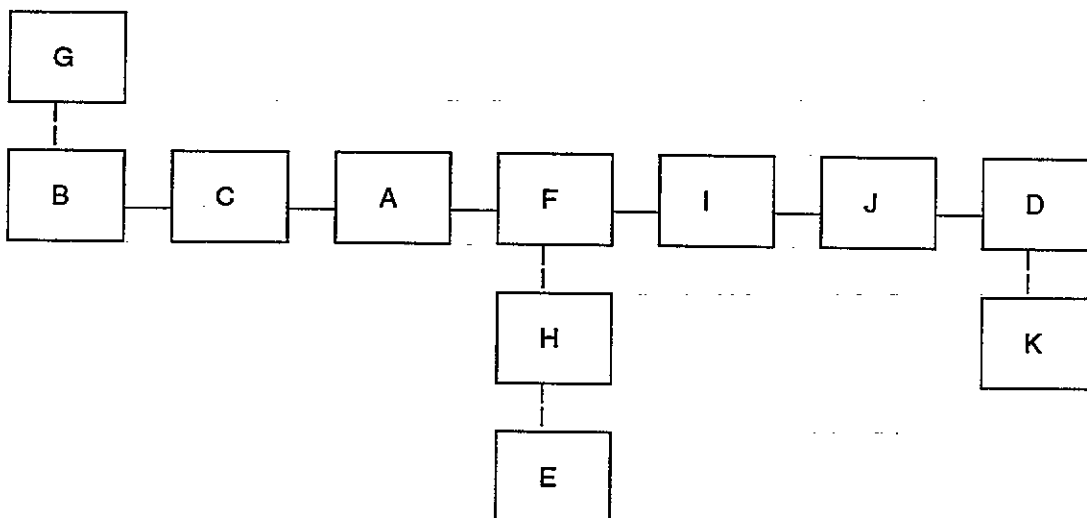
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

50  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

## 5.0 PROCEDURE:

1. Connect the equipment as shown in block diagram in Section 4.0 of test number 5.
2. Using the terminal set the SDU back-off attenuator to 0 dB. (This is the nominal back-off setting.)
3. Using the terminal set the SDU to transmit a CW carrier on channel 1 at 1643.5 MHz.
4. Using the terminal set the HPA back-off attenuator to produce -6.5 dBm on the spectrum analyzer. This level equals to 25.1 W at the HPA RF antenna port.
5. Capture the spectrum analyzers display and set the display line for the acceptance level.

## 6.0 DATA

The data is presented on the following pages of this test:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

51  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC NO.

EB7516254

CAGE CODE

55939

SEE PAGE INDEX FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

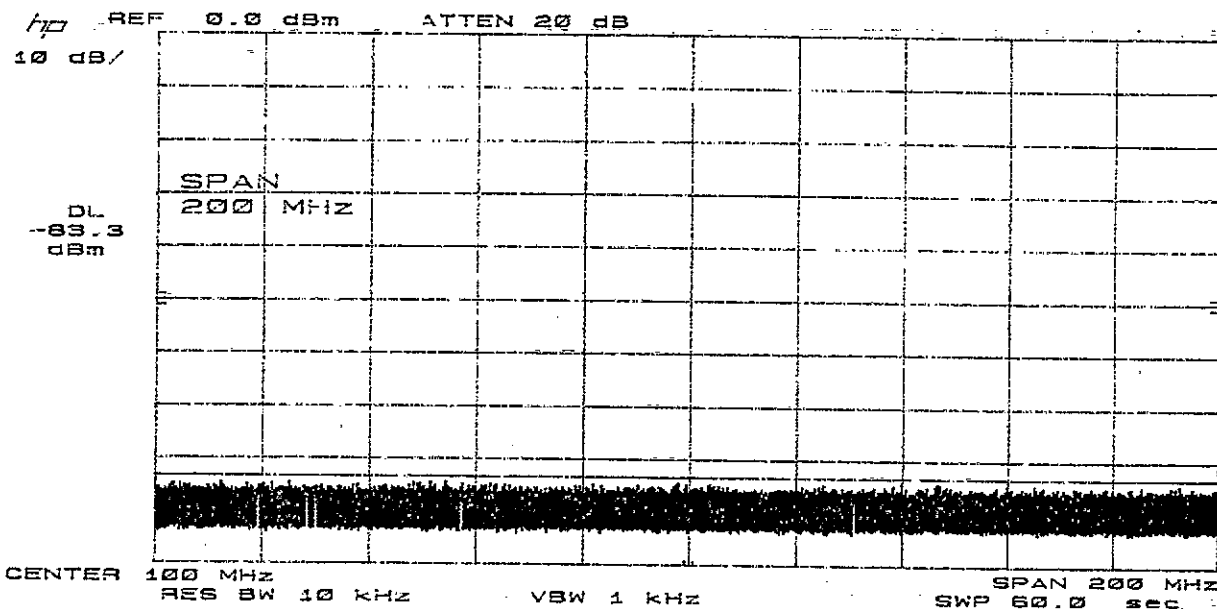


Figure 6-14. 0 to 200 MHz

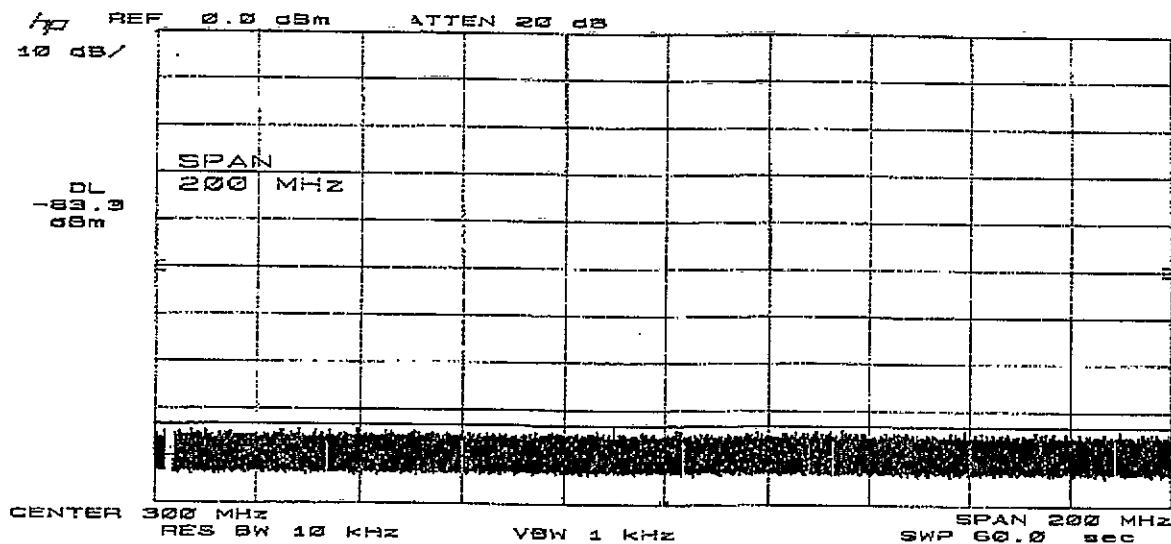


Figure 6-15. 200 MHz to 400 MHz

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

52  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC NO.

EB7516254

CAGE CODE

55939

SEE PAGE INDEX FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

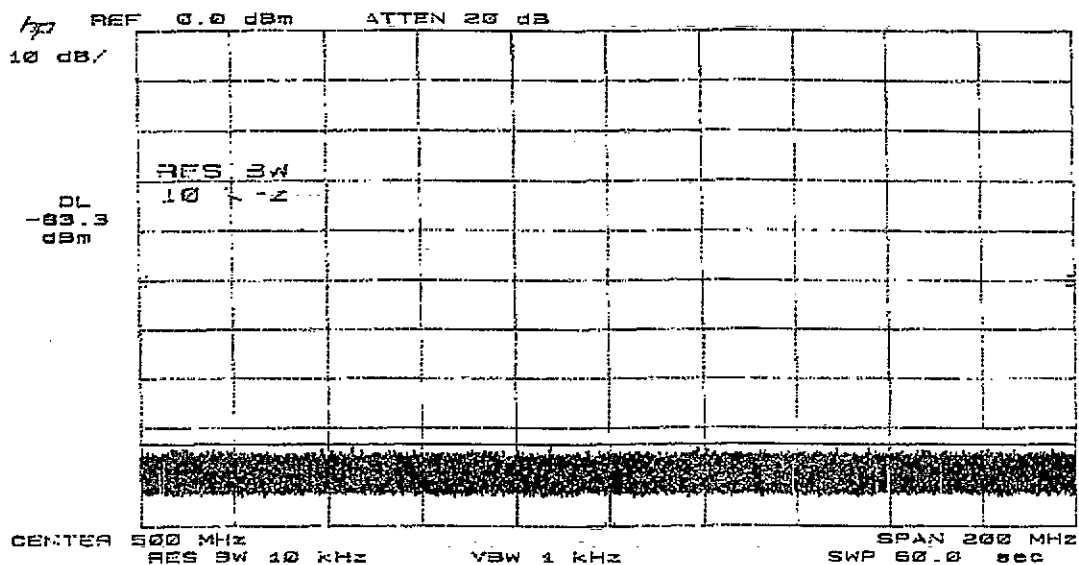


Figure 6-16. 400 MHz to 600 MHz

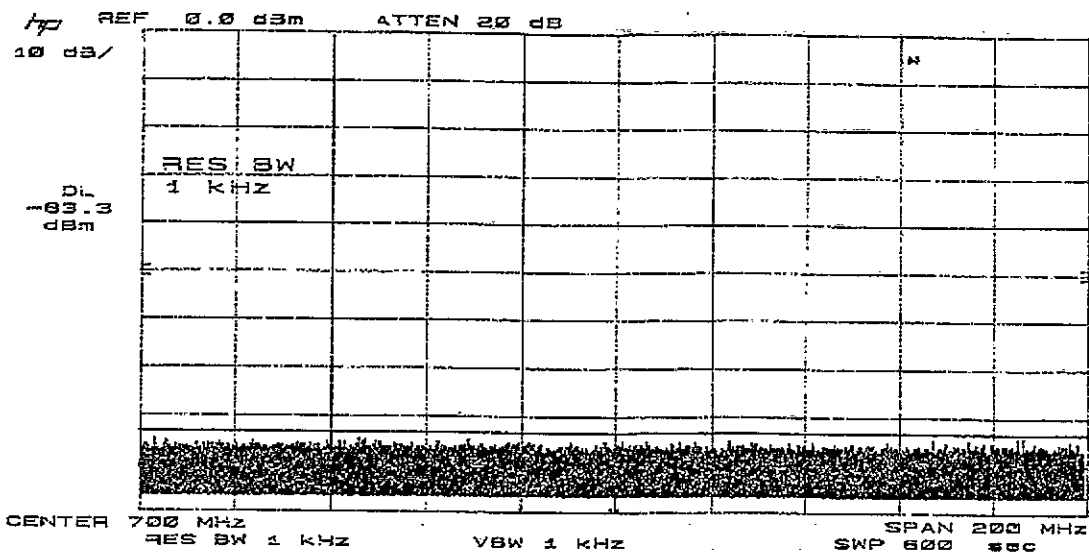


Figure 6-17. 600 MHz to 800 MHz

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

53  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC NO.

EB7516254

CAGE CODE

55939

SEE PAGE INDEX FOR THIS SHEET REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

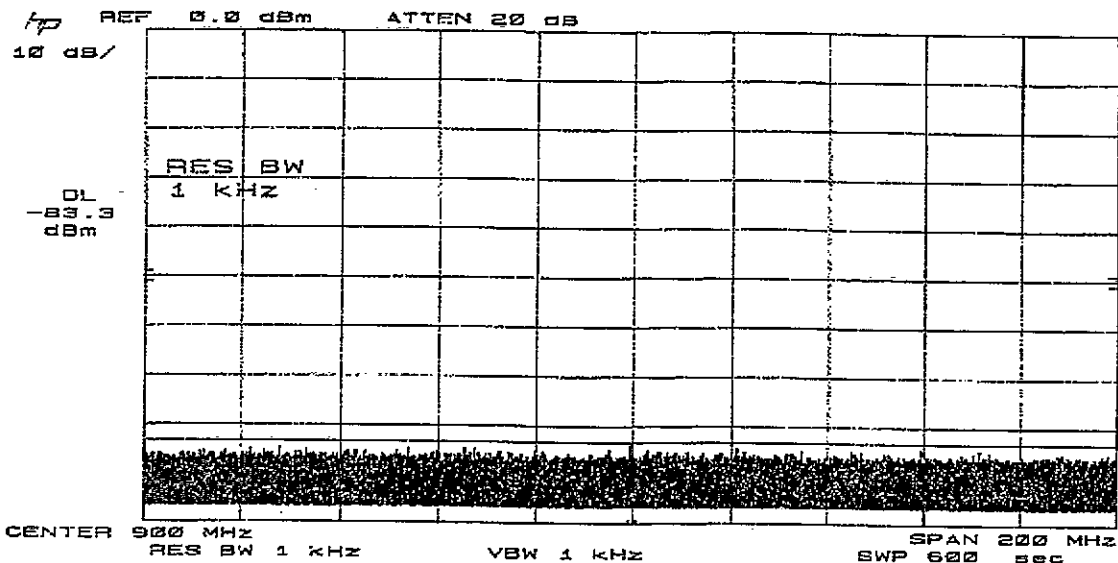


Figure 6-18. 800 MHz to 1000 MHz

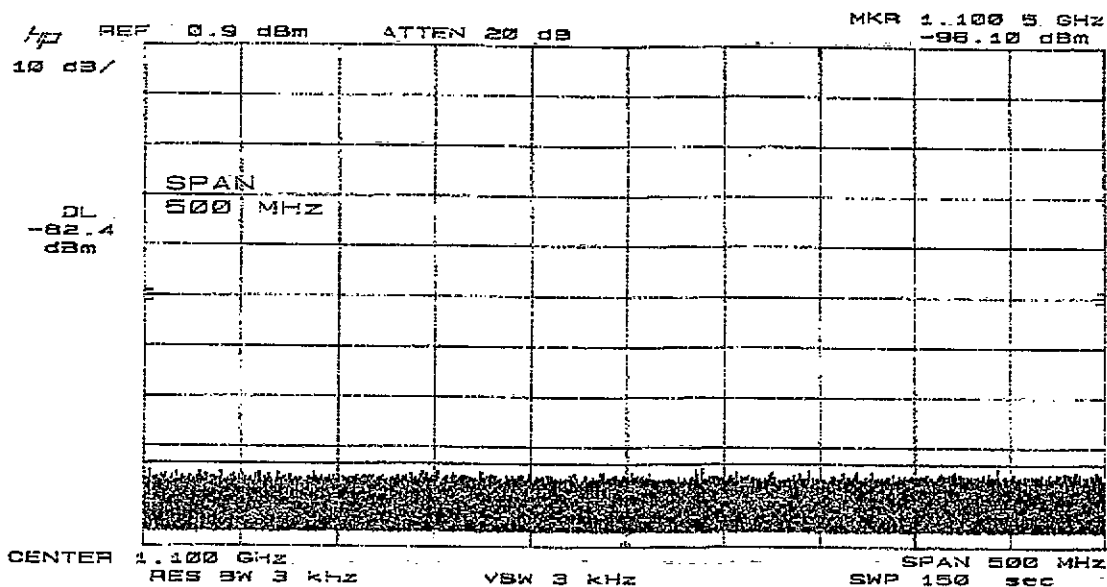


Figure 6-19. 850 MHz to 1350 MHz

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

54  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

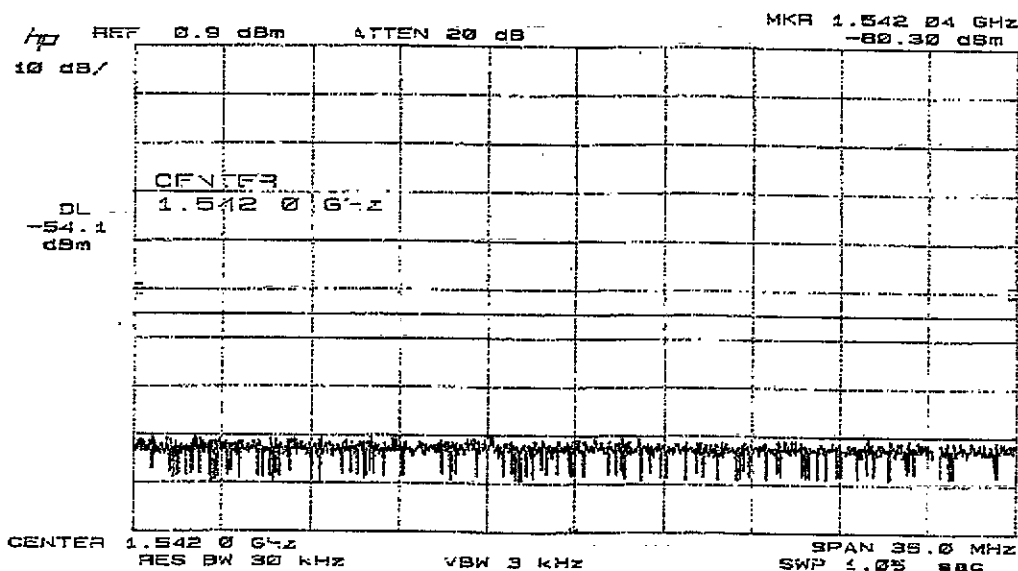


Figure 6-20. 1524.5 MHz to 1559.5 MHz

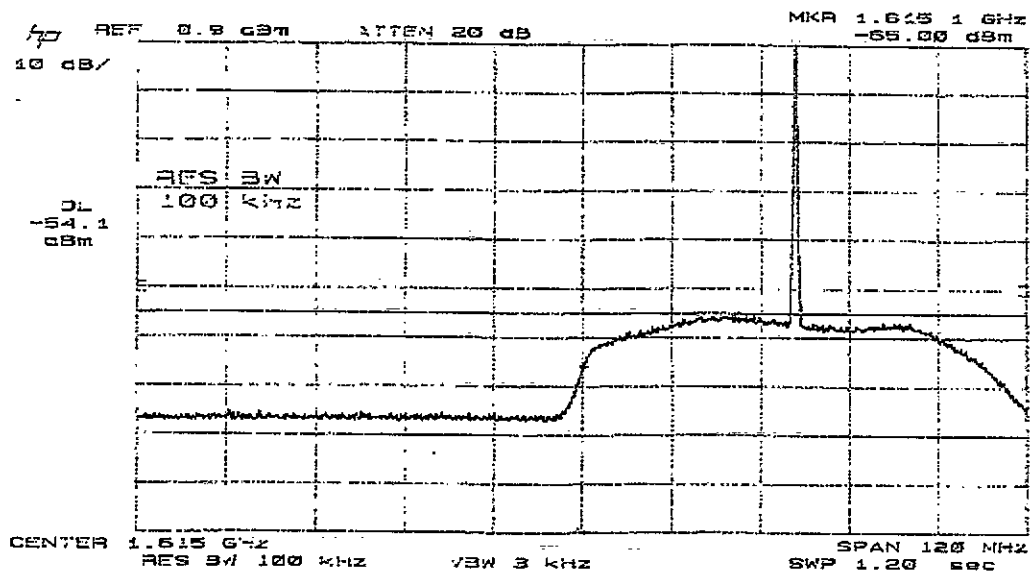


Figure 6-21. 1555 MHz to 1675 MHz

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

55  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC NO.

EB7516254

CAGE CODE

55939

SEE PAGE INDEX FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

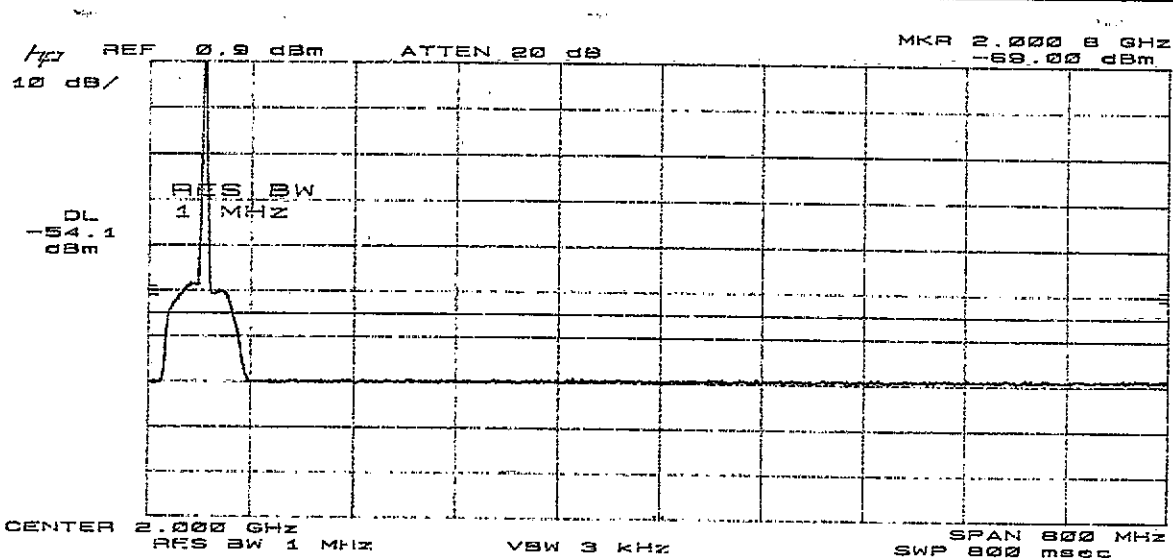


Figure 6-22. 1600 MHz to 2400 MHz

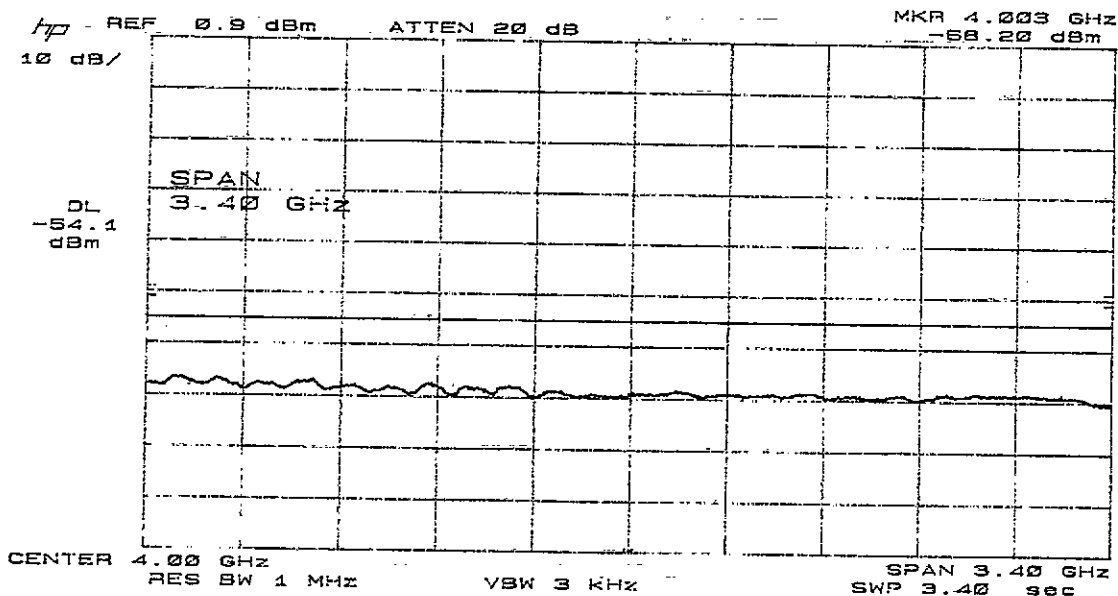


Figure 6-23. 2300 MHz to 5700 MHz

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

56  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC NO.

EB7516254

CAGE CODE

55939

SEE PAGE INDEX FOR THIS SHEET REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV LTR

TEST PROCEDURES AND DATA:

TEST NO: 5

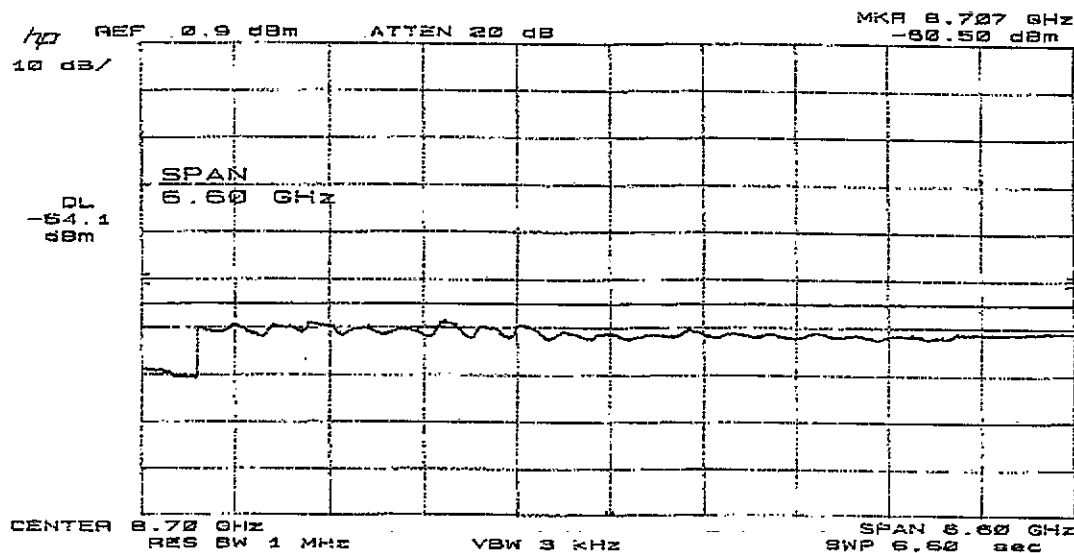


Figure 6-24. 5400 MHz to 12000 MHz

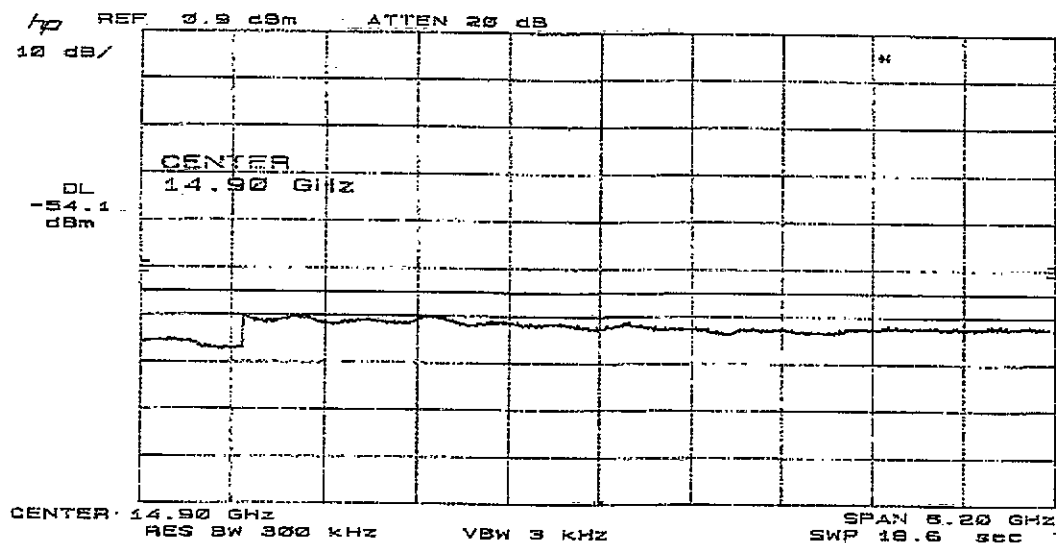


Figure 6-25. 11800 MHz to 18000 MHz

TEST PERFORMED BY:

*[Signature]*

DATE: 6-12-98

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

57  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 6

1.0 DESCRIPTION OF TEST: Spurious emission (Radiated)2.0 SPECIFICATIONS: 47 CFR 87.139

3.0 EQUIPMENT REQUIRED:

|   | <u>TYPE</u>                        | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER.<br/>NO.</u> |
|---|------------------------------------|---------------------|--------------|---------------------|
| A | High Power Amplifier               | Honeywell           | HP600        | -                   |
| B | Satellite Data Unit                | Honeywell           | SD600        | -                   |
| C | Pre Amplifier                      | Hewlett Packard     | 8449A        | -                   |
| D | Spectrum Analyzer                  | Hewlett Packard     | 8563E        | -                   |
| E | Biconical Antenna (30-300MHz)      | EMCO                | 3109         | -                   |
| F | Log Periodic Antenna (200-1000MHz) | APREL               | 2001         | -                   |
| G | Horn antenna (1-18GHz)             | EMCO                | 3115         | -                   |
| H | 20 dB Attenuator                   | Narda               | 757-20       | -                   |
| I | 30 dB Attenuator, 150W             | Narda               | 769-30       | -                   |
| J | 50 Ohm RF Termination 5W           | Narda               | 377BNM       | -                   |
| K | Terminal                           | Dell w/Procom       | -            | -                   |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

58  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

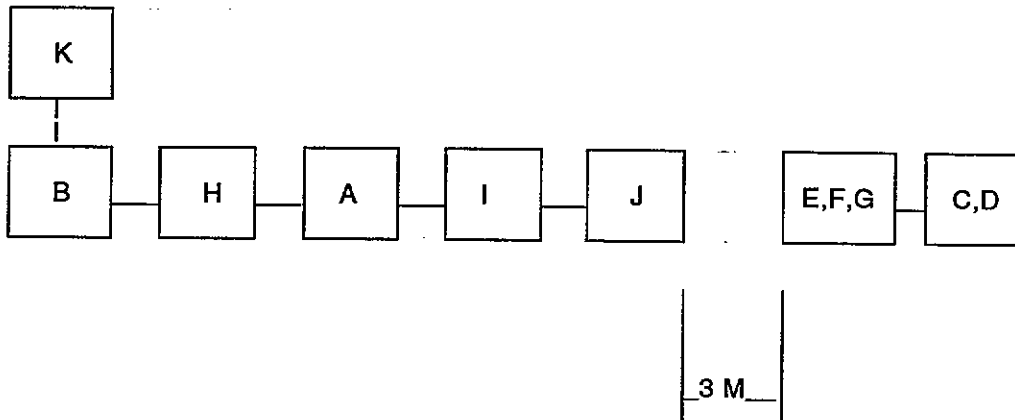
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 6

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

59  
PAGE

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                                             |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------|
| <h1>ENGINEERING SPECIFICATION</h1>                                                  | SECURITY NOTATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SPEC NO. EB7516254 | SEE PAGE INDEX FOR THIS SHEET<br>REV LETTER |
|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | CAGE CODE 55939    |                                             |
| SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                                             |
| REV LTR                                                                             | TEST PROCEDURES AND DATA: <span style="float: right;">TEST NO: 6</span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                                             |
|                                                                                     | <p>5.0 PROCEDURE:</p> <ol style="list-style-type: none"> <li>Place the LRUs in an appropriate open field are on a turntable 1 meter above the ground and temporarily connect the equipment as shown in the block diagram of the previous test (Spurious Emissions -Conducted). See figures 6-26 and 6-27.</li> <li>Using the terminal set the SDU back-off attenuator to 0 dB.</li> <li>Using the terminal, set the SDU to transmit a CW carrier on Channel 1 at 1643.5 MHz.</li> <li>Using the terminal set the HPA back-off attenuator until the carrier level is about -6.5 dBm on the spectrum analyzer. This level equals to 25.1 W total power at the HPA RF antenna port.</li> <li>Without turning the LRUs off, reconfigure the test setup as shown for the spurious emission radiated test.</li> <li>Using the antenna in vertical and in horizontal polarization between 1 meter and 4 meter elevation above the ground plane and while rotating the platform 360°, measure and record the maximum value of the radiated energy between 1643.5 MHz and up to 16435 MHz.</li> </ol> |                    |                                             |
|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                                             |
|  | AW/CRITICAL NOTATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                             |
|                                                                                     | SECURITY NOTATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SUPPLEMENTS        | 60<br>PAGE                                  |

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

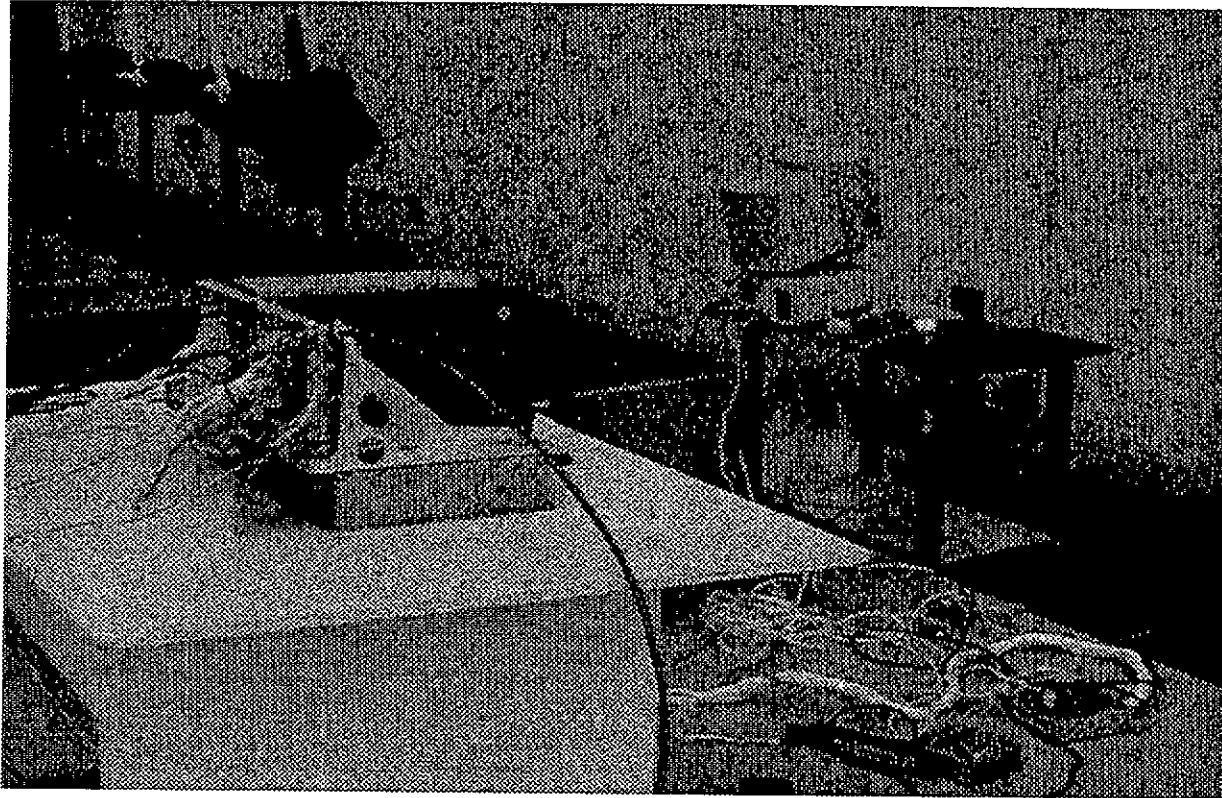


Figure 6-26. Test Setup and Equipment

## Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

61  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

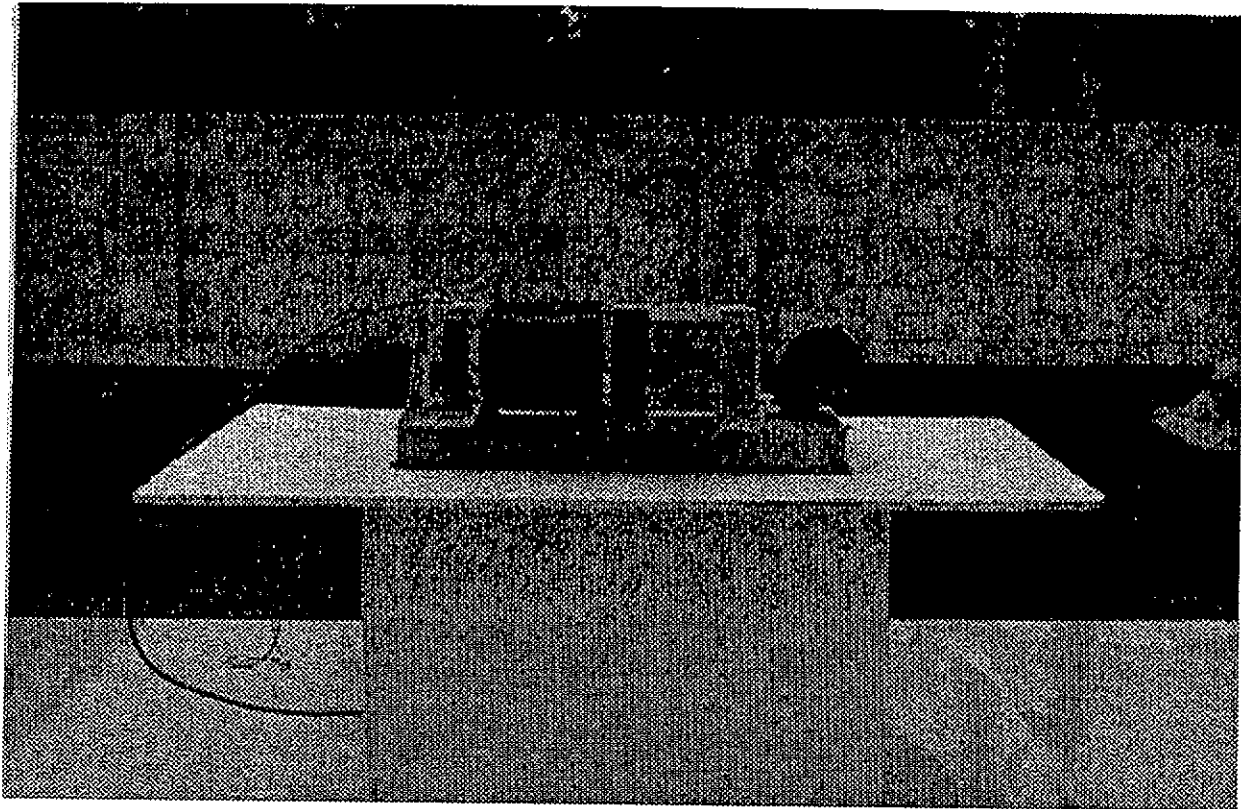


Figure 6-27. UUT on Turntable

## Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

62  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

## TEST PROCEDURES AND DATA:

TEST NO: 6

## 6.0 DATA: Radiated Energy

| TUNED<br>MHz | EMISSION LEVEL<br>MHz | C.F.<br>dBuV/m | CALC.<br>@m | CALC.<br>dB | dB Uv/M | @m | uV/m |
|--------------|-----------------------|----------------|-------------|-------------|---------|----|------|
| 0.000        | 30.010000             | 11.0           | 3           | 16.4        | 27.4    | 3  | 24   |
| 0.000        | 32.880000             | 22.6           | 3           | 15.9        | 38.5    | 3  | 84   |
| 0.000        | 36.760000             | 28.8           | 3           | 15.3        | 44.1    | 3  | 161  |
| 0.000        | 44.630000             | 39.1           | 3           | 13.8        | 52.9    | 3  | 442  |
| 0.000        | 48.510000             | 42.0           | 3           | 13.1        | 55.0    | 3  | 564  |
| 0.000        | 52.880000             | 41.7           | 3           | 12.3        | 54.0    | 3  | 503  |
| 0.000        | 64.260000             | 37.5           | 3           | 10.8        | 48.2    | 3  | 258  |
| 0.000        | 68.130000             | 30.1           | 3           | 10.4        | 40.5    | 3  | 106  |
| 0.000        | 74.010000             | 21.3           | 3           | 10.0        | 31.2    | 3  | 36   |
| 0.000        | 83.880000             | 30.3           | 3           | 10.1        | 40.3    | 3  | 104  |
| 0.000        | 87.010000             | 22.6           | 3           | 10.4        | 33.0    | 3  | 45   |
| 0.000        | 106.630000            | 32.5           | 3           | 13.3        | 45.8    | 3  | 196  |
| 0.000        | 115.010000            | 33.4           | 3           | 14.3        | 47.7    | 3  | 242  |
| 0.000        | 118.260000            | 34.2           | 3           | 14.6        | 48.8    | 3  | 275  |
| 0.000        | 122.130000            | 31.1           | 3           | 14.8        | 45.9    | 3  | 198  |
| 0.000        | 127.760000            | 24.3           | 3           | 15.0        | 39.4    | 3  | 93   |
| 0.000        | 131.630000            | 22.8           | 3           | 15.2        | 38.0    | 3  | 79   |
| 0.000        | 142.260000            | 19.8           | 3           | 15.9        | 35.7    | 3  | 61   |
| 0.000        | 149.510000            | 7.6            | 3           | 16.0        | 23.6    | 3  | 15   |
| 0.000        | 178.380000            | 13.2           | 3           | 15.7        | 28.9    | 3  | 28   |
| 0.000        | 183.630000            | 36.5           | 3           | 16.1        | 52.6    | 3  | 426  |
| 0.000        | 188.130000            | 16.4           | 3           | 16.5        | 33.0    | 3  | 44   |
| 0.000        | 194.760000            | 34.1           | 3           | 17.2        | 51.3    | 3  | 365  |
| 0.000        | 203.260000            | 8.0            | 3           | 18.0        | 26.0    | 3  | 20   |
| 0.000        | 211.880000            | 8.6            | 3           | 18.8        | 27.4    | 3  | 24   |
| 0.000        | 216.130000            | 15.7           | 3           | 19.2        | 34.9    | 3  | 56   |
| 0.000        | 226.510000            | 6.8            | 3           | 20.0        | 26.8    | 3  | 22   |
| 0.000        | 229.880000            | 7.8            | 3           | 20.2        | 28.0    | 3  | 25   |
| 0.000        | 241.760000            | 7.4            | 3           | 20.7        | 28.1    | 3  | 25   |
| 0.000        | 248.130000            | 6.1            | 3           | 21.1        | 27.2    | 3  | 23   |
| 0.000        | 256.010000            | 6.7            | 3           | 21.3        | 28.0    | 3  | 25   |
| 0.000        | 264.260000            | 8.4            | 3           | 21.5        | 29.9    | 3  | 31   |
| 0.000        | 280.130000            | 12.1           | 3           | 22.2        | 34.3    | 3  | 52   |
| 0.000        | 288.130000            | 8.7            | 3           | 22.1        | 30.8    | 3  | 35   |
| 0.000        | 297.260000            | 9.0            | 3           | 28.8        | 37.8    | 3  | 78   |
| 0.000        | 320.130000            | 21.7           | 3           | 20.6        | 42.4    | 3  | 132  |
| 0.000        | 328.250000            | 14.1           | 3           | 20.8        | 34.9    | 3  | 55   |
| 0.000        | 336.130000            | 18.1           | 3           | 20.9        | 39.1    | 3  | 90   |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

63  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 6

## 6.0 DATA: Radiated Energy (Continued)

| TUNED<br>MHz | EMISSION LEVEL<br>MHz | C.F.<br>dBuV/m | CALC.<br>@m | CALC.<br>dB | dB Uv/M | @m | uV/m |
|--------------|-----------------------|----------------|-------------|-------------|---------|----|------|
| 0.000        | 338.000000            | 9.5            | 3           | 21.0        | 30.4    | 3  | 33   |
| 0.000        | 344.130000            | 14.2           | 3           | 21.1        | 35.3    | 3  | 58   |
| 0.000        | 352.000000            | 11.2           | 3           | 21.2        | 32.4    | 3  | 42   |
| 0.000        | 360.130000            | 13.1           | 3           | 21.4        | 34.5    | 3  | 53   |
| 0.000        | 376.130000            | 8.6            | 3           | 21.7        | 30.3    | 3  | 33   |
| 0.000        | 392.130000            | 8.7            | 3           | 22.0        | 30.6    | 3  | 34   |
| 0.000        | 416.130000            | 5.9            | 3           | 22.7        | 28.6    | 3  | 27   |
| 0.000        | 425.130000            | 8.2            | 3           | 23.0        | 31.2    | 3  | 36   |
| 0.000        | 433.630000            | 9.5            | 3           | 23.2        | 32.7    | 3  | 43   |
| 0.000        | 448.130000            | 9.3            | 3           | 23.7        | 33.0    | 3  | 44   |
| 0.000        | 456.130000            | 6.1            | 3           | 23.9        | 30.0    | 3  | 32   |
| 0.000        | 468.130000            | 6.7            | 3           | 24.3        | 31.0    | 3  | 35   |
| 0.000        | 494.000000            | 5.8            | 3           | 25.1        | 30.8    | 3  | 35   |
| 0.000        | 505.750000            | 6.7            | 3           | 25.3        | 32.0    | 3  | 40   |
| 0.000        | 525.130000            | 3.3            | 3           | 25.6        | 28.8    | 3  | 28   |
| 0.000        | 542.130000            | 5.5            | 3           | 25.8        | 31.2    | 3  | 36   |
| 0.000        | 561.130000            | 8.0            | 3           | 26.0        | 34.0    | 3  | 50   |
| 0.000        | 627.250000            | 5.7            | 3           | 27.2        | 32.9    | 3  | 44   |
| 0.000        | 680.250000            | 1.6            | 3           | 28.5        | 30.0    | 3  | 32   |
| 0.000        | 704.130000            | 2.7            | 3           | 29.0        | 31.6    | 3  | 38   |
| 0.000        | 775.000000            | -3             | 3           | 29.9        | 29.6    | 3  | 30   |
| 0.000        | 825.000000            | .1             | 3           | 30.6        | 30.7    | 3  | 34   |
| 0.000        | 874.750000            | 2.1            | 3           | 31.4        | 33.5    | 3  | 47   |
| 0.000        | 924.750000            | .9             | 3           | 32.3        | 33.2    | 3  | 46   |
| 0.000        | 979.000000            | -1.9           | 3           | 33.3        | 31.5    | 3  | 37   |
| 0.000        | 999.880000            | .2             | 3           | 33.7        | 33.9    | 3  | 49   |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

64  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

## TEST PROCEDURES AND DATA:

TEST NO: 6

## 6.0 DATA: Radiated Energy (Continued)

| TUNED<br>MHz | EMISSION<br>MHz | LEVEL<br>dBuV/m | @m | C.F.<br>dB | CALC<br>dBuV/m | @m | EIRP<br>dBm |
|--------------|-----------------|-----------------|----|------------|----------------|----|-------------|
| 1643.500     | 3286.967333     | 69.3            | 3  | 9.3        | 78.6           | 3  | -16.6       |
| 1643.500     | 3286.967333     | 69.2            | 3  | 9.3        | 78.5           | 3  | -16.8       |
| 1643.500     | 4930.467666     | 44.2            | 3  | 13.1       | 57.3           | 3  | -37.9       |
| 1643.500     | 4930.467666     | 49.2            | 3  | 13.1       | 62.3           | 3  | -32.9       |
| 1643.500     | 6573.967999     | 43.3            | 3  | 16.7       | 60.0           | 3  | -35.2       |
| 1643.500     | 6574.101332     | 35.0            | 3  | 16.7       | 51.7           | 3  | -43.5       |
| 1643.500     | 8217.601665     | 29.7            | 3  | 20.6       | 50.2           | 3  | -45.0       |
| 1643.500     | 8217.601665     | 38.5            | 3  | 20.6       | 59.1           | 3  | -36.2       |
| 1643.500     | 9861.101998     | 42.0            | 3  | 22.7       | 64.7           | 3  | -30.6       |
| 1643.500     | 9861.101998     | 31.0            | 3  | 22.7       | 53.7           | 3  | -41.6       |
| 1643.500     | 11504.602331    | 30.2            | 3  | 24.0       | 54.2           | 3  | -41.0       |
| 1643.500     | 11504.602331    | 41.0            | 3  | 24.0       | 65.0           | 3  | -30.2       |
| 1643.500     | 13148.102664    | 39.7            | 3  | 25.1       | 64.8           | 3  | -30.4       |
| 1643.500     | 13148.102664    | 30.2            | 3  | 25.1       | 55.3           | 3  | -39.9       |
| 1643.500     | 14791.602997    | 30.2            | 3  | 25.7       | 55.9           | 3  | -39.4       |
| 1643.500     | 14791.602997    | 40.3            | 3  | 25.7       | 66.0           | 3  | -29.2       |
| 1643.500     | 16435.103330    | 41.8            | 3  | 25.9       | 67.8           | 3  | -27.5       |
| 1643.500     | 16435.103330    | 30.2            | 3  | 25.9       | 56.1           | 3  | -39.1       |

TEST PERFORMED BY:



DATE:

6-12-98

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

65  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

## TEST PROCEDURES AND DATA:

TEST NO: 7

1.0 DESCRIPTION OF TEST: Intermodulation2.0 SPECIFICATIONS: 47 CFR 87.139

## 3.0 EQUIPMENT REQUIRED:

|   | <u>TYPE</u>          | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u> |
|---|----------------------|---------------------|--------------|-----------------|
| A | High Power Amplifier | Honeywell           | HP700        | 97110006        |
| B | Satellite Data Unit  | Honeywell           | SD600        | 95040674        |
| C | 20 dB Attenuator     | Narda               | 757-20       | -               |
| D | Spectrum Analyzer    | Hewlett Packard     | 8566B        | AV55142         |
| E | Power Meter          | Hewlett Packard     | 438B         | AV53490         |
| F | Directional Coupler  | Narda               | 3242B-20     | -               |
| G | Terminal (PC)        | Dell w/ Procom      | -            | -               |
| H | 20 dB Attenuator     | Narda               | 766-20       | -               |
| I | 30 dB Attenuator     | Weinschel Eng.      | 4830-33      | -               |
| J | Diplexer/LNA         | Com Atlantic        | P/N 103624   | S/N 1690116     |
| K | Plotter              | Hewlett Packard     | 7475A        | AV58285         |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

66  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTERCAGE  
CODE

55939

REV LTR

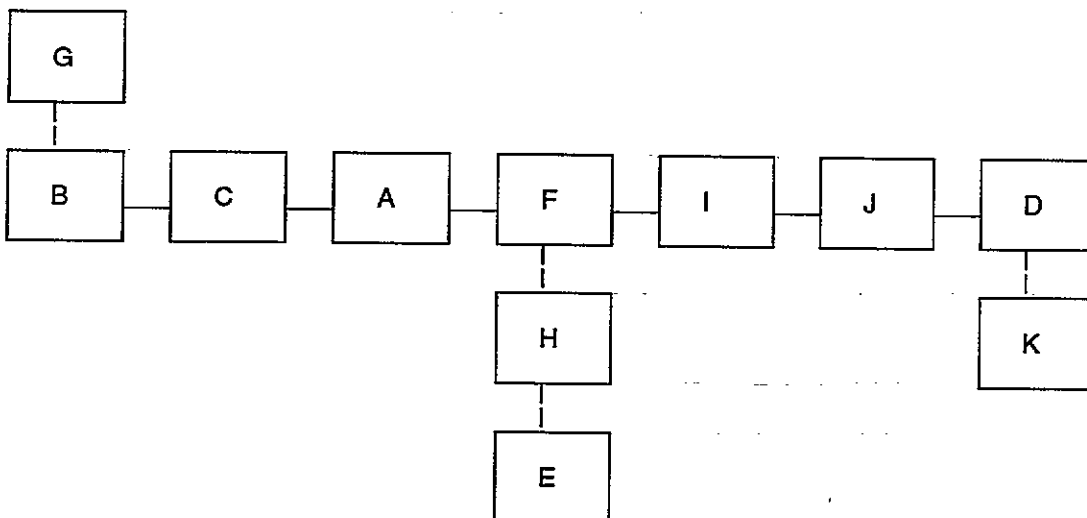
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 7

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

67  
PAGE

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                    |                                             |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------|---------------------------------------------|
| <h1>ENGINEERING SPECIFICATION</h1> | SECURITY NOTATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             | SPEC NO. EB7516254 | SEE PAGE INDEX FOR THIS SHEET<br>REV LETTER |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             | CAGE CODE 55939    |                                             |
|                                    | SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |                    |                                             |
| REV LTR                            | <div>TEST PROCEDURES AND DATA: <span style="float: right;">TEST NO: 7</span></div> <hr/> <div> <div>5.0</div> <div> <p>PROCEDURE:</p> <ol style="list-style-type: none"> <li>1. Connect the equipment as shown in the block diagram in Section 4.0 of test number 3.</li> <li>2. Using the terminal set the SDU back-off attenuator to 3 dB for channel 1 and for channel 2.</li> <li>3. Using the terminal set the SDU to transmit a CW carrier on channel 1 at 1626.5 MHz.</li> <li>4. Using the terminal set the HPA back-off attenuator to until the carrier level is about -9.5 dBm on the spectrum analyzer. This level equals to 20 W at the HPA RF antenna port.</li> <li>5. Using the terminal, set channel 2 to transmit</li> </ol> </div> </div> <div> <div>6.0</div> <div> <p>DATA: The data is presented on the following pages of this test:</p> <p>The display line indicates the acceptance level. Marker is placed on the strongest intermodulation product.</p> </div> </div> |             |                    |                                             |
|                                    | <div> <div>Honeywell</div> <div>AW/CRITICAL NOTATION</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |                    |                                             |
| SECURITY NOTATION                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SUPPLEMENTS | 68<br>PAGE         |                                             |

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 7

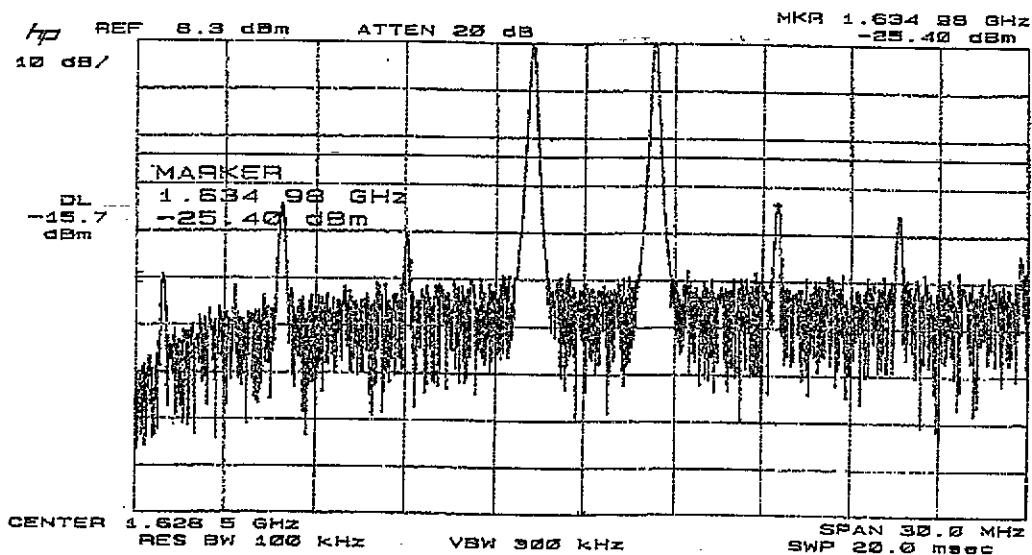


Figure 6-28.

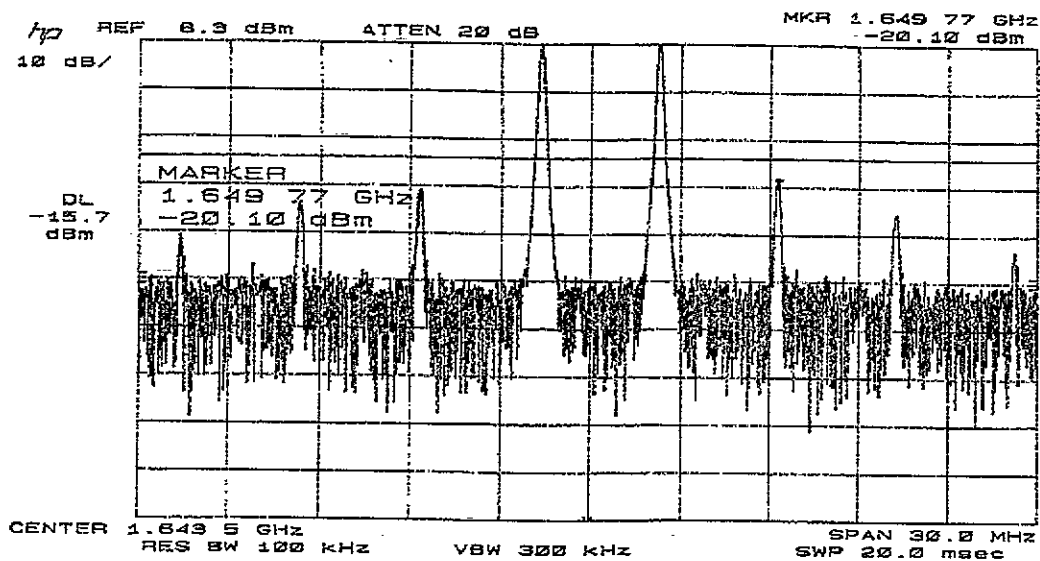


Figure 6-29.

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

69  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 7

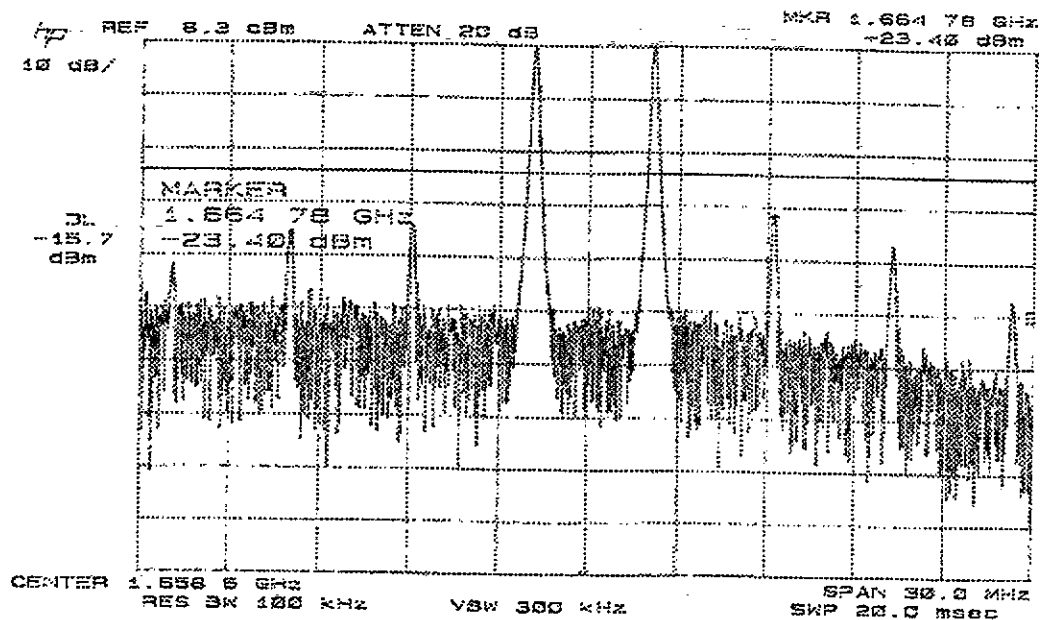


Figure 6-30.

TEST PERFORMED BY

*[Signature]*

DATE: 6-12-98

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

70  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 8

1.0 DESCRIPTION OF TEST: Transmitter Emission Limits (Tx Mask)2.0 SPECIFICATIONS: 47 CFR 87.139

3.0 EQUIPMENT REQUIRED:

|   | <u>TYPE</u>          | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SER. NO.</u> |
|---|----------------------|---------------------|--------------|-----------------|
| A | High Power Amplifier | Honeywell           | HP700        | 97110006        |
| B | Satellite Data Unit  | Honeywell           | SD600        | 95040674        |
| C | 20 dB Attenuator     | Narda               | 757-20       | -               |
| D | Spectrum Analyzer    | Hewlett Packard     | 8566B        | AV55142         |
| E | Power Meter          | Hewlett Packard     | 438B         | AV53490         |
| F | Directional Coupler  | Narda               | 3242B-20     | -               |
| G | Terminal (PC)        | Dell w/ Procom      | -            | -               |
| H | 20 dB Attenuator     | Narda               | 766-20       | -               |
| I | 30 dB Attenuator     | Weinschel Eng.      | 4830-33      | -               |
| J | Diplexer/LNA         | Com Atlantic        | P/N 103624   | S/N 1690116     |
| K | Plotter              | Hewlett Packard     | 7475A        | AV58285         |

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

71  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

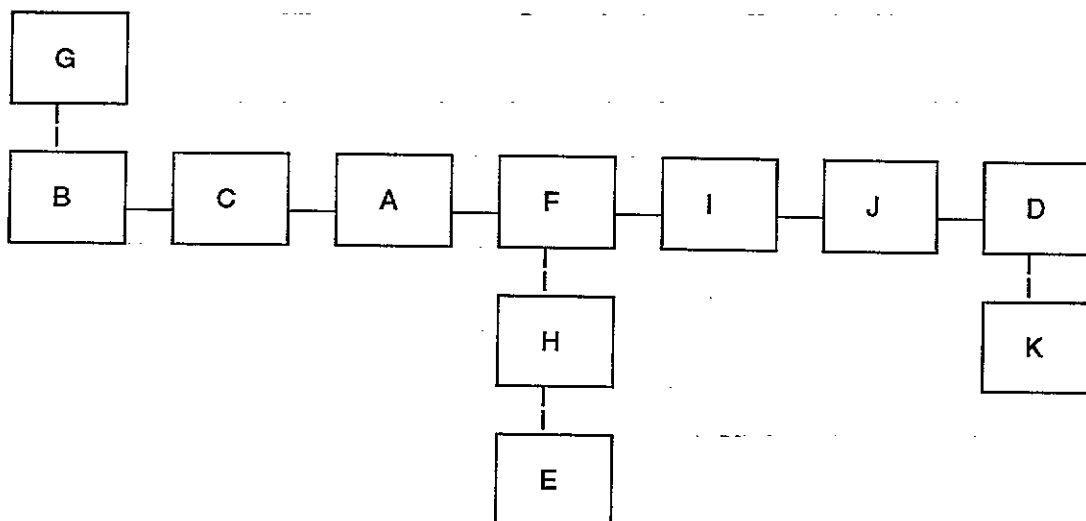
SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 8

## 4.0 BLOCK DIAGRAM OF TEST SETUP:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

72  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

## TEST PROCEDURES AND DATA:

TEST NO: 8

### 5.0 PROCEDURE:

1. Set the spectrum analyzer to 100 kHz span, 1643.5 MHz center frequency, 10 dB/division, 1 kHz resolution BW and 30 kHz video bandwidth.
2. Connect the equipment as shown in block diagram in Section 4.
3. Using the terminal set the SDU back-off attenuator to 0 dB. (This is the nominal back-off setting for the SDU.)
4. Using the terminal set the SDU to transmit a CW carrier on channel 1 at 1643.5 MHz.
5. Using the terminal set the HPA back-off attenuator to produce -6.5 dBm on the spectrum analyzer. This level equals 25.1 W at the HPA RF antenna port.
6. Using the terminal, set the SDU to transmit a 1643.5 MHz on C-Channel (21 kps). This will yield the widest bandwidth in the transmit spectrum due to the highest bit rate.
7. Capture the spectrum analyzers display

First spectrum: Channel 1, C-Channel, 21 kbps, 25.1

Second spectrum: Channel 1, P-Channel, 600 bps, 25.1

Third spectrum: Channel 1, P-Channel, 1.2 kbps, 25.1

Fourth spectrum: Channel 1, P-Channel, 10.5 kbps, 25.1

Frequency for all conditions: 1643.5

| Limit: | Frequency Offset           | Attenuation [dB] |
|--------|----------------------------|------------------|
|        | $\pm 0.075$                | 0                |
|        | $\pm 1.4$                  | 20               |
|        | $\pm 2.8$                  | 40               |
|        | $\pm 4$ SR or $\pm 35$ kHz | $F_m$            |

 $F_m = 55$  or  $[37 + 10 \log(\text{py})]$  whichever is greater

SR = Symbol Rate

- 6.0 DATA: The data with the applicable transmit mask is presented on the following pages:

**Honeywell**

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

73  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC  
NO.

EB7516254

CAGE  
CODE

55939

SEE PAGE INDEX  
FOR THIS SHEET  
REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV  
LTR

TEST PROCEDURES AND DATA:

TEST NO: 8

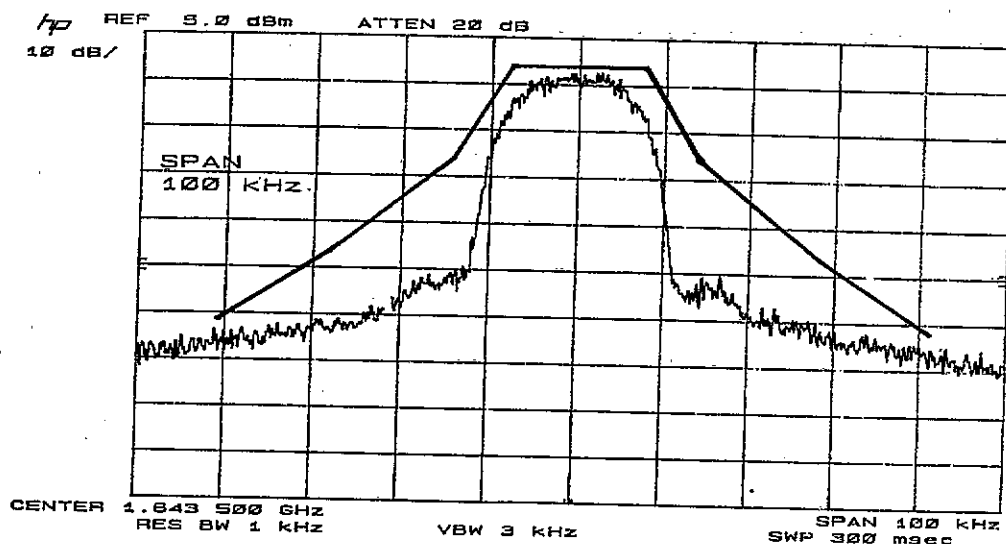


Figure 6-31. Channel 1, C-Channel, 21 kbps

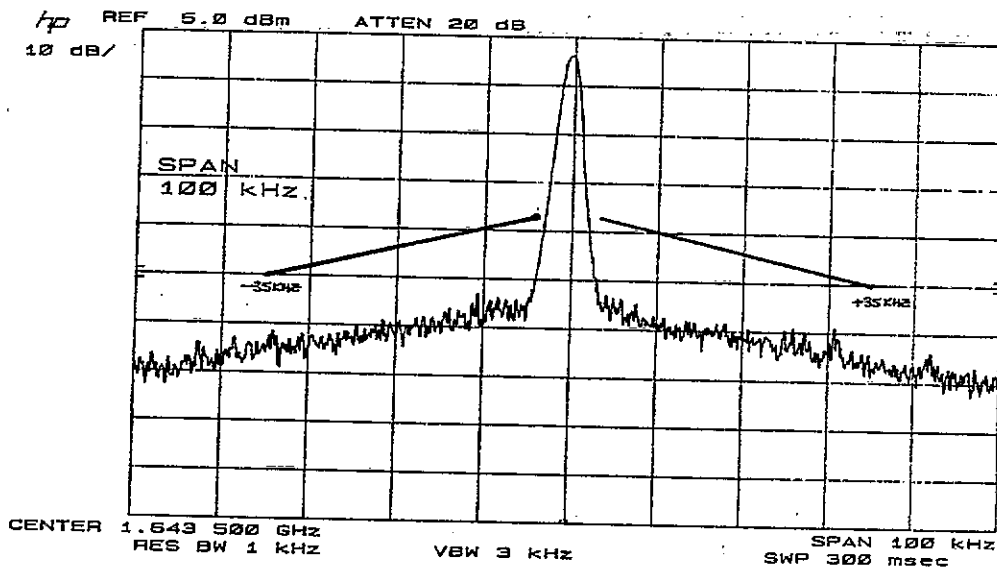


Figure 6-32. Channel 1, P-Channel, 600 bps

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

74  
PAGE

# ENGINEERING SPECIFICATION

SECURITY NOTATION

SPEC NO.

EB7516254

CAGE CODE

55939

SEE PAGE INDEX FOR THIS SHEET REV LETTER

REV LTR

SEE THE TITLE PAGE FOR PROPRIETARY AND DATA RIGHTS NOTATIONS.

REV LTR

TEST PROCEDURES AND DATA:

TEST NO: 8

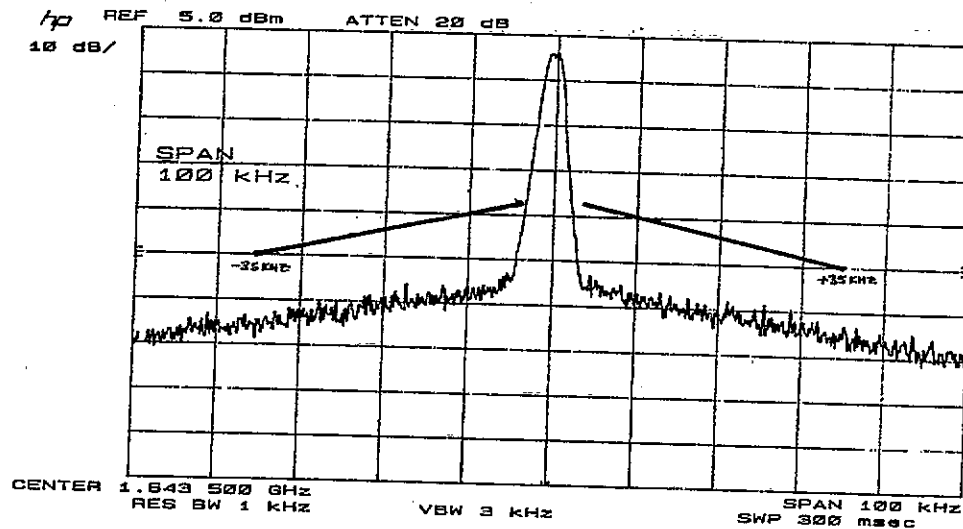


Figure 6-33. Channel 1, P-Channel, 1.2 kbps

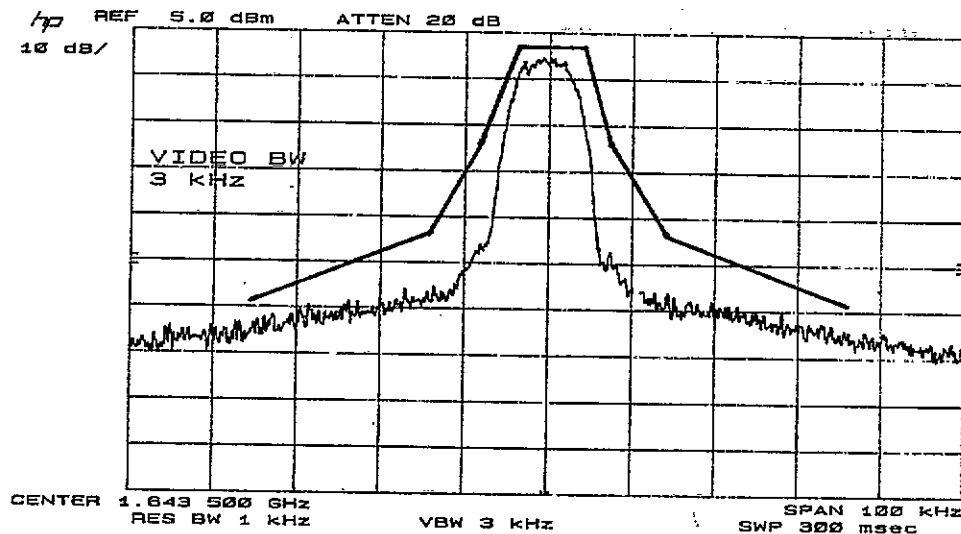


Figure 6-34. Channel 1, P-Channel, 10.5 kbps

TEST PERFORMED BY:

*[Signature]*

DATE: 6-12-98

Honeywell

AW/CRITICAL NOTATION

SECURITY NOTATION

SUPPLEMENTS

75  
PAGE