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THEORY OF OPERATION

Block diagram

Refer to page 133. The AR5000 is wide range communications receiver operating in the range of 10kHz - 2600MHz continuous. It consists of a tripple conversion superheterodyne receiver.

RF circuits

Signal input from antenna connectors is switched to a selected band pass filter (BAND 1 - BAND 17) through 4 mechanical relays and 3 attenuators. 12 pcs. of band pass filters(BAND 4 - BAND 15) for 500kHz - 1000MHz range are electronically preset tuning on receiving frequency for better performance. BAND 1 is low pass filter, BAND 2 & 3 are not exist, BAND 16 & 17 are combination of high pass filters and low pass filters.

6 pcs. RF amplifiers are provided for the total frequency range and one AIP amplifier which has no gain is for below 230MHz to get better intercept point when RF amplifier is OFF.

Mixers

2 pcs. 1st mixers provided, 1stMIX-1 (DBM-2 NIS-502) for above 400MHz and 1stMIX-2 (DBM-1 NIS-501) for below 400MHz. 1st IF is 622.0-622.4 MHz (400kHz bandwidth).

2nd mixer (DBM-1 NIS-501) makes 2nd IF of 10.7MHz.

3rd mixer (part of MC3372) makes 3rd IF of 455kHz with 10.245MHz crystal oscillator inside of the same IC MC3372.

2nd IF 10.7MHz output socket is provided at the rear panel of the AR5000 for optional spectrum display unit (wide band) and other purposes (selected bandwidth).

IF filters

1st IF filter is 622.2MHz centered +/-200kHz band pass filter.

6 pcs. 2nd IF filters(10.7MHz) selectable as indicated.

6 pcs. builtin 3rd IF filters(455kHz) selectable and 3 optional Collins mechanical filters can be installed.

Local oscillators

1st local injection of 622.400MHz - 2022.000MHz

2nd local injection of 611.700MHz → 611.300MHz for 10kHz-1400MHz range
611.300MHz → 611.700MHz for 1400-2600MHz range

3rd local injection of 10.245MHz crystal oscillator.

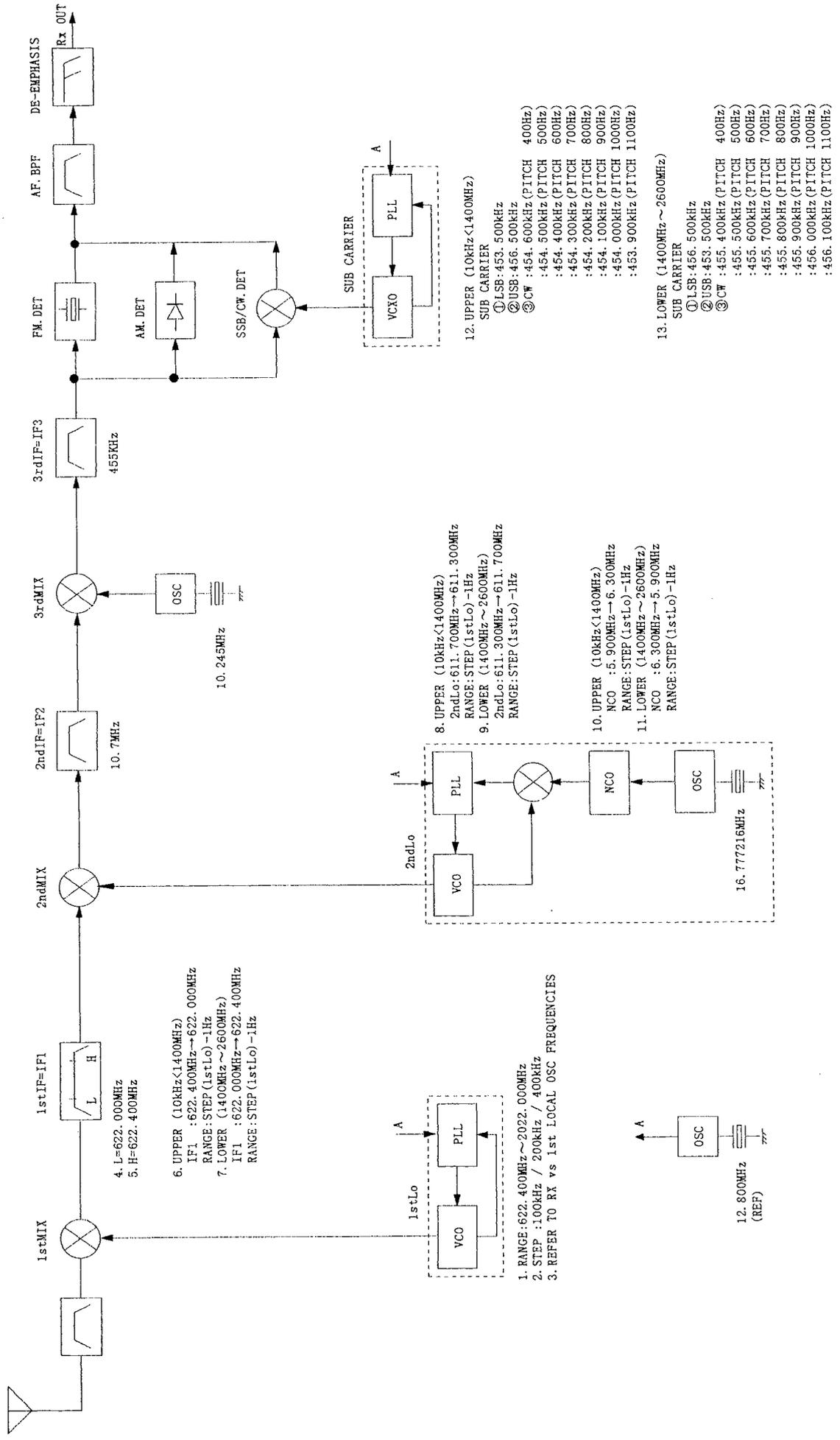
3rd IF amplifier/detector

Two amplifiers provided for 455kHz 3rd IF stages, one for FM by MC3372 combination IC, other for SSB/CW by 3 stage 3SK131 FET discrete amplifier and additional bipolar transistor stage for AM detection.

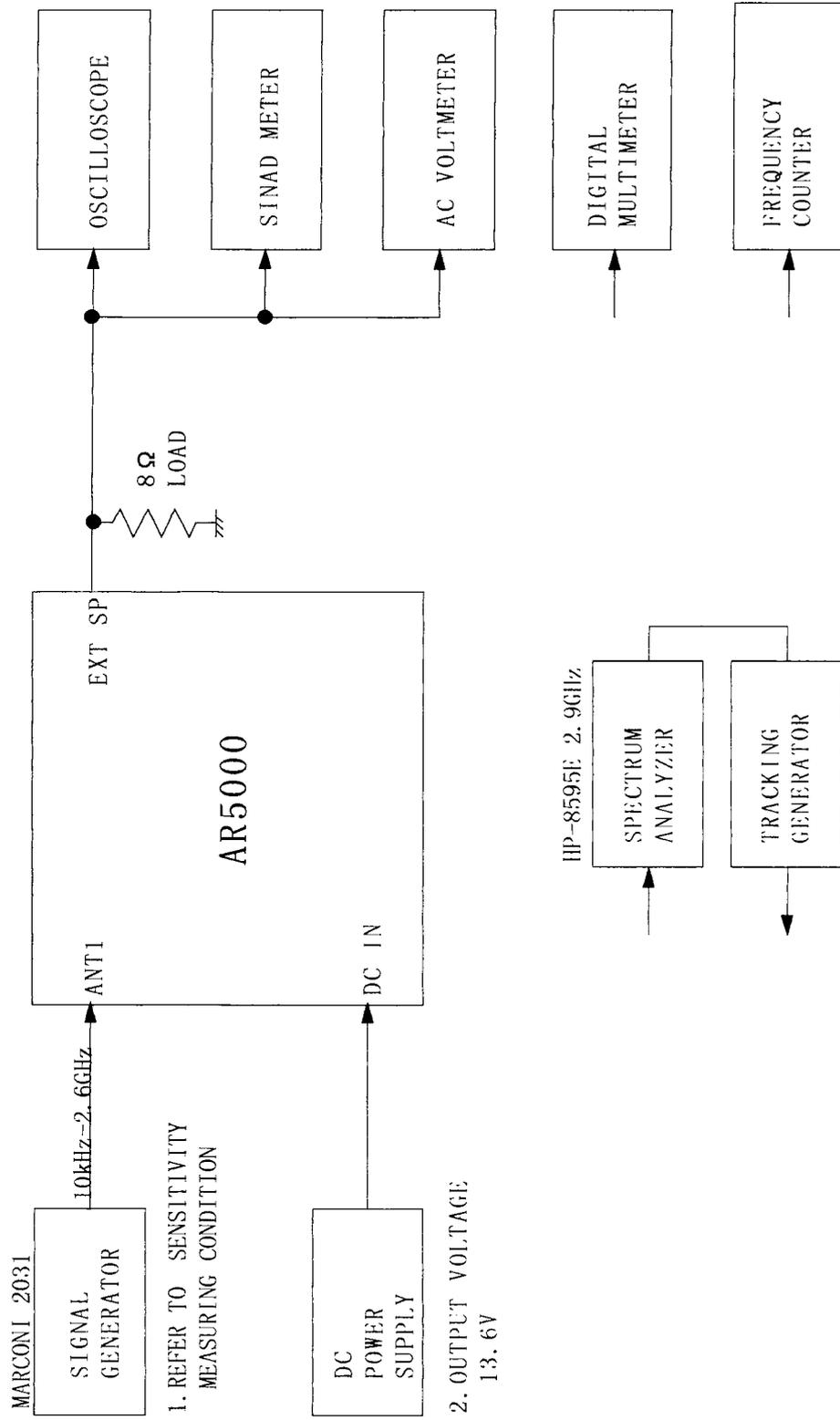
Audio stage

Signal from each detector is selected by analog switch and passes through HPF high pass filter and LPF low pass filter for suitable audio response per detection mode then amplified for 1.7W audio power to the internal speaker.

AR5000 SIGNAL BLOCK DIAGRAM



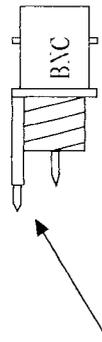
AR5000 TESTING BLOCK DIAGRAM



AR5000 SPECIAL PROBES

1. AC

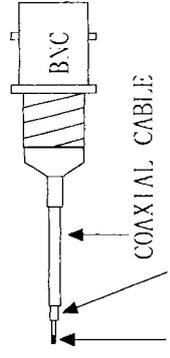
- ① AC VOLTAGE IN PLOT DATA
- ② USE DC CUT CABLE



SPRING LOADED PINS

2. DC

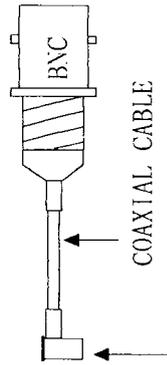
- ① DC VOLTAGE IN PLOT DATA



SIGNAL GND
SOLDER

3. DC1

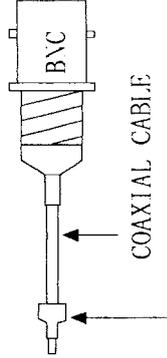
- DC1 INDICATION IN PLOT DATA



COAXIAL CONNECTOR

4. DC2

- ① DC2 INDICATION IN PLOT DATA



COAXIAL CONNECTOR

AR5000 SENSITIVITY MEASURING CONDITION

1. FM (12dB SINAD)

| AR5000 | | | | SIGNAL GENERATOR | | | REMARKS |
|--------|--------------|----------|-------------|------------------|-----------|----------------------------|---------|
| IFBW | AUDIO FILTER | | DE-EMPHASIS | FM-DEV | | | |
| | HPF | LPF | | STD-DEV | MAX-DEV | | |
| 6KHz | 0.3 KHz | 3.0 KHz | 750 μS | 1.75 KHz | 2.50 KHz | 1. WITH STANDARD DEVIATION | |
| 15KHz | 0.3 KHz | 3.0 KHz | 750 μS | 3.50 KHz | 5.00 KHz | | |
| 30KHz | 0.05 KHz | 12.0 KHz | 75 μS | 7.00 KHz | 10.00 KHz | | |
| 110KHz | 0.05 KHz | 12.0 KHz | 75 μS | 25.00 KHz | 35.00 KHz | | |
| 220KHz | 0.05 KHz | 12.0 KHz | 75 μS | 50.00 KHz | 75.00 KHz | | |

2. AM (10dB S/N)

| AR5000 | | | | SIGNAL GENERATOR | | | REMARKS |
|--------|--------------|----------|-------------|------------------|---------|----------------------------|---------|
| IFBW | AUDIO FILTER | | DE-EMPHASIS | AM-MOD | | | |
| | HPF | LPF | | STD-MOD | MAX-MOD | | |
| 6KHz | 0.3 KHz | 3.0 KHz | THROUGH | 60% | | 1. WITH STANDARD DEVIATION | |
| 15KHz | 0.3 KHz | 3.0 KHz | THROUGH | 60% | | | |
| 30KHz | 0.05 KHz | 12.0 KHz | THROUGH | 60% | | | |
| 110KHz | 0.05 KHz | 12.0 KHz | THROUGH | 60% | | | |
| 220KHz | 0.05 KHz | 12.0 KHz | THROUGH | 60% | | | |

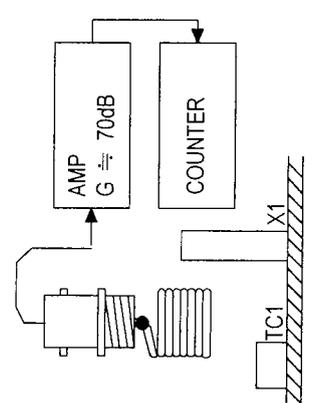
3. SSB/CW (12dB SINAD)

| AR5000 | | | | SIGNAL GENERATOR | | | REMARKS |
|---------|--------------|---------|-------------|------------------|---------|------------------|---------|
| IFBW | AUDIO FILTER | | DE-EMPHASIS | MOD | | | |
| | HPF | LPF | | STD-MOD | MAX-MOD | | |
| 0.5 KHz | 0.2 KHz | 3.0 KHz | THROUGH | OFF | | 1. 1KHz CW PITCH | |
| 3.0 KHz | 0.2 KHz | 3.0 KHz | THROUGH | OFF | | | |
| | | | | | | | |

AR 5000 I F - P C B A L I G N M E N T 1 / 3

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | SG SET FREQ MHz | LEVEL dBm | MOD | REMARKS |
|----------------------|-------------|------|----------|--------|-----|---------------|-------------|---|-----------------|-----------|-----|--|
| 1 AGC START | 129.900 | FM | 25 | 15 | ON | TP-5 | VR2 | 4.55V + 0.02V - 0.03V | 129.900 | OFF | OFF | |
| 2 RF GAIN START | 129.900 | FM | 25 | 15 | ON | TP-5 | VR3 | 4.55V + 0.02V - 0.03V | 129.900 | OFF | OFF | 1.SQ-VR (FRONT PANEL) SET FULLY COUNTER CLOCK WISE CCW POSITION |
| 3 S-METER OFFSET | 129.900 | FM | 25 | 15 | ON | TP-8 | VR4 | 4.40V + 0.02V - 0.02V | 129.900 | OFF | OFF | |
| 4 10.7MHz MCF 15KHz | 129.900 | FM | 25 | 15 | OFF | | T2,T6 T8 | REFER IF1 - C | 129.900 | OFF | OFF | 1.INPUT,OUTPUT & OTHER CONDITIONS REFERED TO IF1 - C 2.T2,T6 (WAVE SHAPE) REFER IF1 - C WAVE SHAPE ADJUST REPEATEDLY 3.T8 (PEAK) ADJUST FOR PEAK |
| 5 10.7MHz MCF 6KHz | 129.900 | FM | 25 | 6 | OFF | | | REFER IF1 - B | 129.900 | OFF | OFF | CHECK ONLY |
| 6 10.7MHz MCF 3KHz | 129.900 | FM | 25 | 3 | OFF | | | REFER IF1 - A | 129.900 | OFF | OFF | CHECK ONLY |
| 7 10.7MHz MCF 30KHz | 129.900 | FM | 25 | 30 | OFF | | T4,T5 | REFER IF1 - D | 129.900 | OFF | OFF | 1.T4,T5 (WAVE SHAPE) REFER IF1 - D WAVE SHAPE ADJUST REPEATEDLY |
| 8 10.7MHz MCF 110KHz | 129.900 | FM | 25 | 110 | OFF | | VR8 | BW=15KHz (ref) - 5dB + 3dB - 1dB REFER IF2 - A | 129.900 | OFF | OFF | 1.VR8 (LEVEL) ADJUST ON LOW LEVELLED BW 2.AFTER ADJUSTMENT CHECK IF BOTH BW ARE IN SPECS. |
| 9 10.7MHz MCF 220KHz | 129.900 | FM | 25 | 220 | OFF | | VR8 | REFER IF2 - B | 129.900 | OFF | OFF | |
| 10 10.7MHz EXT | 129.900 | FM | 25 | 15 | OFF | | T3 | REFER IF2 - C | 129.900 | OFF | OFF | 1.T3 REFER IF2 - C WAVE SHAPE |

A R 5 0 0 0 I F - P C B A L I G N M E N T 2 / 3

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | SG SET FREQ MHz | LEVEL dBm | MOD | REMARKS |
|------|--------------------------|---------|----------|--------|-----|---------------|--------------------------|-------------------------------|-----------------|-----------|-----|---|
| 11 | 10.245MHz (FREQUENCY) | 129.900 | FM | 25 | 15 | ON | TC1 | 10.245MHz + 10Hz - 10Hz | | | | 1. REFER BELOW FIGURE FOR ADJUSTMENT ① PICK UP COIL WIRE SIZE : 1.0mm dia. INNER DIA. : 10mm NO. OF TURNS : 7 ② AMP GAIN : APPROX. 70dB |
| 12 | IFT | 129.900 | FM | 25 | 15 | ON | S-METER T7 | | 129.900 | - 108 | OFF |  1. INPUT ANT1 2. VR1 PRESET S2 ON THE S-METER 3. T7 (PEAK) ADJUST FOR PEAK ON THE S-METER |
| 13 | IFT | 129.900 | FM | 25 | 15 | ON | S-METER T10, T11, T12 | | 129.900 | - 108 | OFF | 1. INPUT ANT1 2. VR1 PRESET S2 ON THE S-METER 3. T10, T11, T12 (PEAK) ADJUST FOR PEAK ON THE S-METER |

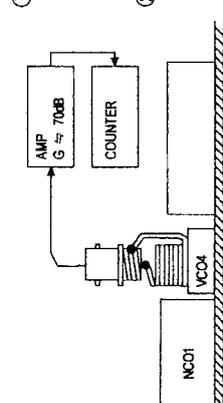
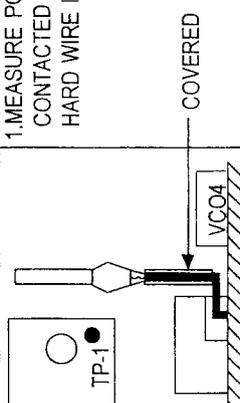
A R 5 0 0 0 I F - P C B A L I G N M E N T 3 / 3

| ITEM | RX FREQ MHZ | MODE | STEP KHZ | BW KHZ | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | SGSET FREQ MHZ | LEVEL dBm | MOD | REMARKS |
|--------------------------|-------------------|------|-------------|-----------|-----|------------------|----------------|-----------------------------|----------------------|--------------|-----|--|
| 14 S-METER S1 | 129.900 | FM | 25 | 15 | ON | S-METER | VR1 | S1 | 129.900 | - 108 | OFF | |
| 15 ATT AUTO THRESHOLD | 129.900 | FM | 25 | 15 | ON | TP-9 | VR6 | 4.30V + 0.05V - 0.05V | 129.900 | - 25 | OFF | |
| 16 AGC MAX | 129.900 | FM | 25 | 15 | ON | TP-9 | VR6 | 4.70V + 0.20V - 0.20V | 129.900 | 0 | OFF | 1. IF IN SPECS. PROCEED TO (17) 2. IF OUT OF SPECS. ① VR6 RE-ADJUST FOR SPECS. ② AFTER RE-ADJUSTMENT CHECK IF (15) IS IN SPECS. ③ ADJUST FOR WANTED SPECS. ON BOTH 15 & 16 |
| 17 S-METER + 60dB | 129.900 | FM | 25 | 15 | ON | S-METER | VR7 | S + 60dB | 129.900 | 0 | OFF | |
| 18 L-SQL MAX | 129.900 | FM | 25 | 15 | ON | TP-9 | VR5 | 4.70V + 0.05V - 0.05V | 129.900 | OFF | OFF | 1. ADJUST AT L-SQL VALUE OF 255 |

AR 5 0 0 0 PLL -- PCB ALIGNMENT 1 / 2

| ITEM | RX FREQ MHZ | MODE | STEP KHZ | BW KHZ | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | REMARKS |
|---------------|-------------|------|----------|--------|-----|---------------|----------------------------|-----------------|---|
| 1 FILTER -- A | 0.010 | FM | 25 | 15 | ON | | L29,L55 | REFER PLL1 -- A | 1.REFER PLL1 -- A FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L29,L55 (WAVE SHAPE) ADJUST REFERING PLL1 -- A |
| 2 FILTER -- B | 129.900 | FM | 25 | 15 | ON | | L39,L40,L41,L42 | REFER PLL1 -- B | 1.REFER PLL1 -- B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L39,L40,L41,L42 (WAVE SHAPE) ADJUST REFERING PLL1 -- B |
| 3 FILTER -- C | 500.900 | FM | 25 | 15 | ON | | L34,L35,L36,L38 | REFER PLL1 -- C | 1.REFER PLL1 -- C FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L34,L35,L36,L38 (WAVE SHAPE) ADJUST REFERING PLL1 -- C |
| 4 FILTER -- D | 1000.90 | FM | 25 | 15 | ON | | L50,L51,L52,L54 | REFER PLL1 -- D | 1.REFER PLL1 -- D FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L50,L51,L52,L54 (WAVE SHAPE) ADJUST REFERING PLL1 -- D |
| 5 FILTER -- E | 800.900 | FM | 25 | 15 | ON | | L43,L44,L45 L47,L48,L49 | REFER PLL2 -- A | 1.REFER PLL2 -- A FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L43,L44,L45 (WAVE SHAPE) L47,L48,L49 (WAVE SHAPE) ADJUST REFERING PLL2 -- A |
| 6 FILTER -- F | 1200.90 | FM | 25 | 15 | ON | | L26,L27,L28 L31,L32,L33 | REFER PLL2 -- B | 1.REFER PLL2 -- B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L26,L27,L28 (WAVE SHAPE) L31,L32,L33 (WAVE SHAPE) ADJUST REFERING PLL2 -- B |

AR 5000 PLL - PCB ALIGNMENT 2 / 2

| ITEM | RX FREQ MHz | MODE | STEP MHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | REMARKS |
|---------------------|-------------|------|----------|--------|-----|---------------|-------------|-----------------------------------|--|
| 7 FILTER - J | 129.900 | FM | 25 | 15 | ON | | T1,T2 | REFER PLL3 - C | 1.REFER PLL3 - C FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T1,T2 (WAVE SHAPE) ADJUST REFERING PLL3 - C 3.OFF CENTER IS INTENTIONAL |
| 8 TCXO (FREQUENCY) | 600.000 | FM | 25 | 15 | ON | J1 | TCXO1 | 1222.400MHZ + 100Hz - 100Hz | 1.TCXO1 CRITICAL AND CAREFULL ADJUSTMENT REQUIRED |
| 9 NCO (FREQUENCY) | 129.900 | FM | 25 | 15 | ON | P1-3 | C17 | 16.777216MHZ + 10HZ - 10HZ |  <p>① PICK UP COIL WIRE SIZE : 1.0mm dia. INNER DIA : 10mm NO. OF TURNS : 7 ② AMP GAIN : APPROX. 70dB</p> |
| 10 SUBCARRIER (VCV) | 129.900 | USB | 25 | 15 | ON | TP1 | T3 | 5.00V + 1.0V - 0.5V |  <p>1.MEASURE POINT (TP1) CAN BE CONTACTED BY SPECIAL MADE HARD WIRE INSULATED COVERED WITH INSULATED TUBE</p> |
| 11 SUBCARRIER (VCV) | 129.900 | LSB | 25 | 15 | ON | TP1 | T3 | 2.0V ~ 6.0V | <p>1.IF IN SPECS. PROCEED TO NEXT 2.IF OUT OF SPECS (less than 2.0V) ① T3 RE-ADJUST FOR THE SPECS ② AFTER RE-ADJUSTMENT CHECK IF (10) IS IN SPECS ③ ADJUST FOR BOTH 10,11 SPECS.</p> |

AR 5 0 0 0 FRONT - PCB ALIGNMENT 1 / 9

| ITEM | RX FREQ MHZ | MODE | STEP KHZ | BW KHZ | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | D / A VALUE (TUNE) | REMARKS |
|-----------------------|-------------------|------|-------------|-----------|-----|----------------------|----------------|--|--------------------|--|
| 1 BAND14,15 (BIAS) | 400.000 | FM | 25 | 15 | ON | Q10-D | VR3 | 9.23V + 0.04V - 0.03V | | |
| 2 BAND16 (BIAS) | 1000.000 | FM | 25 | 15 | ON | R2 ● R5 R6 ● L9 | VR1 VR2 | 4.23V + 0.04V - 0.03V 4.23V + 0.04V - 0.03V | | 1.NIS-165 2.BIAS VOLTAGE TENDS TO SHIFT A BIT 3. ● INDICATES JUNCTION POINT OF COMPONENTS |
| 3 BAND17 (BIAS) | 1600.000 | FM | 25 | 15 | ON | R8 ● L8 R11 ● L18 | VR3 VR4 | 4.23V + 0.04V - 0.03V 4.23V + 0.04V - 0.03V | | 1.NIS-165 2.BIAS VOLTAGE TENDS TO SHIFT A BIT 3. ● INDICATES JUNCTION POINT OF COMPONENTS |
| 4 BAND1 | 0.010 | FM | 25 | 15 | ON | | | REFER FRONT1 -- A | | 1.CHECK ONLY 2.REFER FRONT1 -- A FOR INPUT, OUTPUT AND OTHER CONDITIONS |

AR 5000 FRONT - PCB ALIGNMENT 2 / 9

| ITEM | RX FREQ MHZ | MODE | STEP KHZ | BW KHZ | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | D / A VALUE (TUNE) | REMARKS |
|-------------|----------------|------|-------------|-----------|-----|------------------|----------------|-------------------|--------------------|---|
| 5 BAND4 (U) | 0.899 | FM | 25 | 15 | ON | | T10 | REFER FRONT2 -- B | 210 | 1.REFER FRONT2-B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T10 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT2 -- B |
| 6 BAND4 (L) | 0.500 | FM | 25 | 15 | ON | | T10 | REFER FRONT2 -- A | 34 | 1.WITHIN SPECS. PROCEED TO (7) 2.OUT OF SPECS. ① T10 RE-ADJUST (5) WITHIN SPECS. BY OFF-CENTERING ② RE-CHECK IF WITHIN SPECS. ③ IN CASE OUT OF SPECS. REPEAT ①, ② |
| 7 BAND5 (U) | 1.999 | FM | 25 | 15 | ON | | T8 | REFER FRONT2 -- D | 230 | 1.REFER FRONT2-D FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T8 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT2-D |
| 8 BAND5 (L) | 0.900 | FM | 25 | 15 | ON | | T8 | REFER FRONT2 -- C | 39 | 1.WITHIN SPECS. PROCEED TO (9) 2.OUT OF SPECS. ① T8 RE-ADJUST (7) WITHIN SPECS. BY OFF-CENTERING ② RE-CHECK IF WITHIN SPECS. ③ IN CASE OUT OF SPECS. REPEAT ①, ② |

AR 5000 FRONT - PCB ALIGNMENT 3 / 9

| ITEM | RX FREQ MHZ | MODE | STEP KHZ | BW KHZ | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | D / A VALUE (TUNE) | REMARKS |
|--------------|-------------------|------|-------------|-----------|-----|------------------|----------------|------------------|--------------------|--|
| 9 BAND6 (U) | 3.999 | FM | 25 | 15 | ON | T7 | | REFER FRONT3 - B | 230 | 1.REFER FRONT3-B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T7 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT3 - B |
| 10 BAND6 (L) | 2.000 | FM | 25 | 15 | ON | T7 | | REFER FRONT3 - A | 66 | 1.WITHIN SPECS. PROCEED TO (11) 2.IF OUTOF SPECS. ① T7 RE-ADJUST (9) WITHIN SPECS. BY OFF-CENTERING ②RE-CHECK IF IN SPECS. ③ IN CASE OUT OF SPECS. REPEAT ①, ② |
| 11 BAND7 (U) | 9.999 | FM | 25 | 15 | ON | T6 | | REFER FRONT3 - D | 220 | 1.REFER FRONT3-D FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T6 (WAVE SHAPE) ADJUST REPEATEDLYREFERING FRONT3 - D |
| 12 BAND7 (L) | 4.000 | FM | 25 | 15 | ON | T6 | | REFER FRONT3 - C | 65 | 1.WITHIN SPECS. PROCEED TO (13) 2.IF OUT OF SPECS. ① T6 RE-ADJUST (11) WITHIN SPECS. BY OFF-CENTERING ②RE-CHECK IF IN SPECS. ③ IF OUT OF SPECS. REPEAT ①, ② |

AR 5 0 0 0 FRONT - PCB ALIGNMENT 4 / 9

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | D / A VALUE (TUNE) | REMARKS |
|--------------|-------------------|------|-------------|-----------|-----|------------------|----------------|-------------------|--------------------|--|
| 13 BAND8 (U) | 19.999 | FM | 25 | 15 | ON | T5 | T5 | REFER FRONT4 -- B | 193 | 1.REFER FRONT4-B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T5 (WAVE SHAPE) ADJUST REPEATEDLY REFERRING FRONT4 -- B |
| 14 BAND8 (L) | 10000 | FM | 25 | 15 | ON | T5 | T5 | REFER FRONT4 -- A | 35 | 1.WITHIN SPECS. PROCEED TO (15) 2.IF OUT OF SPECS. ① T5 RE-ADJUST (13) WITHIN SPECS. BY OFF-CENTERING ② RE-CHECK IF IN SPECS. ③ IF OUT OF SPECS. REPEAT ①, ② |
| 15 BAND9 (U) | 39.999 | FM | 25 | 15 | ON | T4 | T4 | REFER FRONT4 -- D | 195 | 1.REFER FRONT4-D FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T4 (WAVE SHAPE) ADJUST REPEATEDLY REFERRING FRONT4 -- D |
| 12 BAND9 (L) | 20.000 | FM | 25 | 15 | ON | T4 | T4 | REFER FRONT4 -- C | 32 | 1.WITHIN SPECS. PROCEED TO (17) 2.IF OUT OF SPECS. ① T4 RE-ADJUST (15) WITHIN SPECS. BY OFF CENTERING ② RE-CHECK IF IN SPECS. ③ IF OUT OF SPECS. REPEAT ①, ② |

AR 5000 FRONT - PCB ALIGNMENT 5 / 9

| ITEM | RX FREQ MHZ | MODE | STEP KHZ | BW KHZ | AGC | MEASURE POINT | ADJUST PART | SPECIFIED | D / A VALUE (TUNE) | REMARKS |
|---------------|----------------|------|-------------|-----------|-----|------------------|----------------|------------------|--------------------|---|
| 17 BAND10 (U) | 74.999 | FM | 25 | 15 | ON | | T11 | REFER FRONT5 - B | 205 | 1.REFER FRONT5-B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T11 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT5 - B |
| 18 BAND10 (L) | 40000 | FM | 25 | 15 | ON | | T11 | REFER FRONT5 - A | 53 | 1.WITHIN SPECS. PROCEED TO (19) 2.IF OUT OF SPECS. ① T11 RE-ADJUST (17) WITHIN SPECS. BY OFF-CENTERING ② RE-CHECK IF IN SPECS. ③ IF OUT OF SPECS. REPEAT ①, ② |
| 19 BAND11 (U) | 149.999 | FM | 25 | 15 | ON | | T12 | REFER FRONT5 - D | 240 | 1.REFER FRONT5-D FOR INPUT, OUTPUT & OTHER CONDITIONS 2.T12 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT5 - D |
| 20 BAND11 (L) | 75.000 | FM | 25 | 15 | ON | | T12 | REFER FRONT5 - C | 52 | 1.WITHIN SPECS. PROCEED TO (21) 2.IF OUT OF SPECS. ① T12 RE-ADJUST (19) WITHIN SPECS. BY OFF-CENTERING ② RE-CHECK IF IN SPECS. ③ IF OUT OF SPECS. REPEAT ①, ② |

AR 5 0 0 0 FRONT - PCB ALIGNMENT 6 / 9

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | D / A VALUE (TUNE) | REMARKS |
|---------------|-------------------|------|-------------|-----------|-----|------------------|----------------|------------------|--------------------|---|
| 21 BAND12 (U) | 229.999 | FM | 25 | 15 | ON | | L45,L46 | REFER FRONT6 - B | 230 | 1.REFER FRONT6-B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L45,L46 (WAVE SHAPE) ADJUST REPEATEDLYREFERING FRONT6 -- B |
| 22 BAND12 (L) | 150.000 | FM | 25 | 15 | ON | | L45,L46 | REFER FRONT6 - A | 39 | 1.WITHIN SPECS. PROCEED TO (23) 2.IF OUT OF SPECS. ① L45,L46 RE-ADJUST (21) WITHIN SPECS. BY OFF-CENTERING ② RE-CHECK IF IN SPECS. ③ IF OUT OF SPECS. REPEAT ①, ② |
| 23 BAND13 (U) | 399.999 | FM | 25 | 15 | ON | | L41,L42 | REFER FRONT6 - D | 139 | 1.REFER FRONT6-D FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L41,L42 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT6-D |
| 24 BAND13 (L) | 230.000 | FM | 25 | 15 | ON | | L41,L42 | REFER FRONT6 - C | 14 | 1.WITHIN SPECS. PROCEED TO (25) 2.IF OUT OF SPECS. ① L41,L42 RE-ADJUST (23) WITHIN SPECS. BY OFF-CENTERING ② RE-CHECK IF IN SPECS. ③ IF OUT OF SPECS. REPEAT ①, ② |

A R 5 0 0 0 F R O N T - P C B A L I G N M E N T 7 / 9

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | D / A VALUE (TUNE) | REMARKS |
|---------------|-------------------|------|-------------|-----------|-----|------------------|----------------|------------------|--------------------|--|
| 25 BAND14 (U) | 699.999 | FM | 25 | 15 | ON | L23,L24 | L23,L24 | REFER FRONT7 - B | 170 | 1.REFER FRONT7-B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L23,L24 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT7 - B |
| 26 BAND14 (L) | 400.000 | FM | 25 | 15 | ON | L23,L24 | L23,L24 | 別紙 FRONT7 - A | 22 | 1.IF IN SPECS. PROCEED TO (27) 2.IF OUT OF SPECS. ① L23,L24 RE-ADJUST (25) WITHIN SPECS. BY OFF-CENTERING ②RE-CHECK IF IN SPECS. ③IF OUT OF SPECS. REPEAT ①, ② |
| 27 BAND15 (U) | 999.999 | FM | 25 | 15 | ON | L20,L21 | L20,L21 | 別紙 FRONT7 - D | 165 | 1.REFER FRONT7-D FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L20,L21 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT7 - D |
| 28 BAND15 (L) | 700.000 | FM | 25 | 15 | ON | L20,L21 | L20,L21 | 別紙 FRONT7 - C | 71 | 1.IF IN SPECS. PROCEED TO (29) 2.IF OUT OF SPECS. ① L20,L21 RE-ADJUST (27) WITHIN SPECS. BY OFF-CENTERING ②RE-CHECK IF IN SPECS. ③IF OUT OF SPECS. REPEAT ①, ② |

AR 5000 FRONT - PCB ALIGNMENT 8 / 9

| ITEM | RX FREQ MHZ | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | D / A VALUE (TUNE) | REMARKS |
|--------------------|-------------------|------|-------------|-----------|-----|------------------|----------------|-------------------|--------------------|---|
| 29 BAND16 | 1000.000 | FM | 25 | 15 | ON | L15 | | REFER FRONT8 -- A | | 1.REFER FRONT8-A FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L15 (WAVE SHAPE) ADJUST REFERING FRONT8 -- A |
| 30 BAND17 | 1600.000 | FM | 25 | 15 | ON | L10,L19 | | REFER FRONT8 -- B | | 1.REFER FRONT8-B FOR INPUT, OUTPUT & OTHER CONDITIONS 2.L10,L19 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT8 -- B |
| 31 FIRST IF FILTER | 129.9000 | FM | 25 | 15 | ON | T2,T3 | | REFER FRONT8 -- C | | 1.REFER FRONT8-C FOR INPUT, OUTPUT & OTHRE CONDITIONS 2.T2,T3 (WAVE SHAPE) ADJUST REPEATEDLY REFERING FRONT8 -- C |

AR 5000 FRONT - PCB ALIGNMENT 9 / 9

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | SG SET FREQ MHz | LEVEL dBm | MOD | REMARKS |
|------|-------------|------|----------|--------|-----|---------------|-------------|----------------------|-----------------|-----------|-----|---|
| 32 | 0.030 | AM | 1 | 6 | ON | | TC1 | MORE THAN 12dB SINAD | 0.030 | - 96 | 60% | 1.INPUT ANT1 2.OUTPUT EXT SP ADJUST TC1 FOR BEST SINAD OF AUDIO OUTPUT |
| 33 | 0.010 | CW | 1 | 3 | ON | | TC1 | MORE THAN 12dB SINAD | 0.010 | - 80 | OFF | 1.IF IN SPECS. FINISH ALIGNMENT 2.IF OUT OF SPECS. ① TC1 RE-ADJUST FOR SPECS. ② AFTER RE-ADJUSTMENT, CHECK IF (32) MET IN SPECS. ③ ADJUST FOR BOTH 32,33 SPECS. |

A R 5 0 0 0 A F C - P C B A L I G N M E N T 1 / 1

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | SG SET FREQ MHz | LEVEL dBm | MOD | REMARKS |
|------------------------------------|-------------------|------|-------------|-----------|-----|------------------|----------------|---|-------------------------------|--------------|-----|--|
| 34 CENTER VOLTAGE (CARRIER ON) | 129.900 | FM | 1 | 15 | ON | TP1 (IC3-7) | T2 | $\frac{137}{256} \times \text{AVref}$ + 0.03V - 0.03V | 129.900 | - 50 | OFF | 1.AFC ADJUST AT AFC OFF 2.INPUT ANT1 3.AVref (A / D reference) J6-5 (POWER-PCB) 4.CENTER VOLTAGE SHOULD BE CALICULATED BY EACH AVref PECULIAR TO |
| 35 CENTER VOLTAGE (CARRIER OFF) | 129.900 | FM | 1 | 15 | ON | TP1 (IC3-7) | T1 | $\frac{137}{256} \times \text{AVref}$ + 0.03V - 0.03V | 129.900 | OFF | OFF | 1.AFC ADJUST AT AFC OFF 2.INPUT ANT1 |
| 36 TRACKING | 129.900 | FM | 1 | 15 | ON | LCD (FREQ) | | FOR SG FREQ + 1.5KHz - 1.5KHz | 129.900 + 25KHz - 25KHz | - 50 | OFF | 1.CHECK TRACKING WITH +/-25kHz CHANGE OF SG FREQUENCY |

AR 5000 SAM - PCB ALIGNMENT I / 1

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | SG SET FREQ MHz | LEVEL dBm | MOD | REMARKS |
|----------------------|-------------------|-------------------|-------------|-----------|-----|------------------|----------------|--|-----------------------|--------------|-----|--|
| 37 SAM SAL SAH | 129.900 | SAM SAL SAH | 25 | 15 | ON | | T3,T4 | SAM MORE THAN 35dB SAL,SAH MORE THAN 30dB WHERE: BW=6kHz SAL,SAH BW=3kHz WHEN [ENT] IS PUSHED | 129.900 | - 50 | 60% | 1.INPUT ANT1 2.OUTPUT EXT SP 3.T3,T4 ADJUST FOR BEST S/N OF AUDIO OUTPUT 4.CHECK S/N AT SAL, SAH 5. IF IN SPECS. FINISH ALIGNMENT 6.IF OUT OF SPECS. ① T3,T4 RE-ADJUST AT WORSE MODE ② AFTER RE-ADJUSTMENT, CHECK S/N AT SAM,SAL,SAH FINISH IF IN SPECS. IF NOT REPEAT ADJUSTMENT 7. IF S/N POOR, TRY TO RE-ROUTE WIRINGS FOR BEST S/N 8. SENSIBLE WIRINGS ON SAM, AFC UNITS |

AR 5 0 0 0 NB - P C B A L I G N M E N T 1 / 1

| ITEM | RX FREQ MHz | MODE | STEP KHz | BW KHz | AGC | MEASURE POINT | ADJUST PART | SPECIFIED VALUE | SG SET FREQ MHz | LEVEL dBm | MOD | REMARKS |
|-------------|-------------------|------|-------------|-----------|-----|------------------|----------------|---------------------------|-----------------------|--------------|-----|--|
| 38 NB (OFF) | 129.900 | FM | 25 | 15 | OFF | TP1 (R40 -- C32) | T1, T2, T5 | 4.0V + 1.0V -- 1.0V | 129.900 | -- 95 | OFF | 1.INPUT ANT1 2.OUTPUT EXT SP 3.T1,T2,T5 SET SG LEVEL FOR APPROX. 4.0V AT MEASURING POINT THEN ADJUST TRANSFORMERS FOR MINIMUM VOLTAGE |
| 39 NB (ON) | 129.900 | CW | 25 | 15 | OFF | | VR1 | | | | | 1.AFTER ALL OTHER ALIGNMENT 2.VR1 ① NB ON TURN CLOCKWISE FROM CCW ② POSITION AND STOP AT NOISE DISAPPEARED 3.APPROX. QUARTER TURN EXPECTED FOR NOISE DISAPPEAR POINT 4.NOISE GENERATION BY RELAY SELF CONTACT SWITCHING |

AR5000 FRONT UNIT DC VOLTAGE

| PARTS NO, | NAME | PIN NO | LEVEL (V) | REMARKS |
|-----------|------|--------|---------------|------------------------------------|
| IC6 | FMC5 | 2 / 5 | +4.9V / +9.6V | ANT2 (M-TYPE) CHOICE |
| IC6 | FMC5 | 2 / 5 | 0.0V / 0.0V | ANT1 (N-TYPE) CHOICE |
| IC7 | FMC5 | 2 / 5 | +4.9V / +9.6V | RF:10K~400MHz,1.6G~2.6GHz |
| IC7 | FMC5 | 2 / 5 | 0.0V / 0.0V | RF:400M~1.6GHz |
| IC3 | FMC5 | 2 / 5 | +4.9V / +9.6V | RF:1G~1.6GHz |
| IC3 | FMC5 | 2 / 5 | 0.0V / 0.0V | RF:10K~1GHz,1.6G~2.6GHz |
| IC4 | FMC5 | 2 / 5 | +4.9V / +9.6V | RF:10K~40MHz,1.6G~2.6GHz |
| IC4 | FMC5 | 2 / 5 | 0.0V / 0.0V | RF:40M~1.6GHz |
| IC33 | FMC5 | 2 / 5 | +4.8V / +9.6V | AIP AMP (BUFF) ON , RF:10K~230MHz |
| IC33 | FMC5 | 2 / 5 | 0.0V / 0.0V | AIP AMP (BUFF) OFF , RF:10K~230MHz |
| IC60 | FMC5 | 2 / 5 | +4.8V / +4.8V | BAND16 ON (RF:1G~1.6GHz) AMP2 |
| IC60 | FMC5 | 2 / 5 | 0.0V / 0.0V | BAND16 OFF (RF:1G~1.6GHz) AMP2 |
| IC61 | FMC5 | 2 / 5 | +4.8V / +4.8V | BAND17 ON (RF:1.6G~2.6GHz) AMP2 |
| IC61 | FMC5 | 2 / 5 | 0.0V / 0.0V | BAND17 OFF (RF:1.6G~2.6GHz) AMP2 |
| IC11 | FMC5 | 2 | +4.8V | BAND15 ON (RF:700M~1GHz) |
| IC11 | FMC5 | 2 | 0.0V | BAND15 OFF (RF:700M~1GHz) |
| IC10 | FMC5 | 2 | +4.8V | BAND14 ON (RF:400M~700MHz) |
| IC10 | FMC5 | 2 | 0.0V | BAND14 OFF (RF:400M~700MHz) |
| IC13 | FMC5 | 2 | +4.8V | BAND16,17 ON (RF:1G~2.6GHz) |
| IC13 | FMC5 | 2 | 0.0V | BAND14,15 ON (RF:400M~1GHz) |
| IC13 | FMC5 | 5 | +9.8V | BAND16,17 ON (RF:1G~2.6GHz) |
| IC13 | FMC5 | 5 | 0.0V | BAND14,15 ON (RF:400M~1GHz) |
| IC14 | FMC5 | 2 | +4.8V | BAND14,15 ON (RF:400M~1GHz) AMP3 |
| IC14 | FMC5 | 2 | 0.0V | BAND14,15 OFF (RF:400M~1GHz) AMP3 |
| IC14 | FMC5 | 5 | +9.7V | BAND14,15 ON (RF:400M~1GHz) AMP3 |
| IC14 | FMC5 | 5 | 0.0V | BAND14,15 OFF (RF:400M~1GHz) AMP3 |
| IC59 | FMC5 | 2 | +4.8V | LESS THAN RF:7MHz |
| IC59 | FMC5 | 2 | 0.0V | MORE THAN RF:7MHz |
| IC59 | FMC5 | 5 | +9.7V | LESS THAN RF:7MHz |
| IC59 | FMC5 | 5 | 0.0V | MORE THAN RF:7MHz |
| IC15 | FMC5 | 2 | +4.8V | BAND13 ON (RF:230M~400MHz) |
| IC15 | FMC5 | 2 | 0.0V | BAND13 OFF (RF:230M~400MHz) |
| IC16 | FMC5 | 2 | +4.8V | BAND12 ON (RF:150M~230MHz) |
| IC16 | FMC5 | 2 | 0.0V | BAND12 OFF (RF:150M~230MHz) |
| IC17 | FMC5 | 2 | +4.8V | BAND11 ON (RF:90M~150MHz) |
| IC17 | FMC5 | 2 | 0.0V | BAND11 OFF (RF:90M~150MHz) |
| IC18 | FMC5 | 2 | +4.8V | BAND10 ON (RF:40M~90MHz) |
| IC18 | FMC5 | 2 | 0.0V | BAND10 OFF (RF:40M~90MHz) |
| IC19 | FMC5 | 2 / 5 | +4.8V / +9.6V | AMP4 ON (BAND13:230M~400MHz) |
| IC19 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP4 OFF (BAND13:230M~400MHz) |
| IC20 | FMC5 | 2 / 5 | +4.8V / +9.5V | AMP5 ON (BAND10,11,12) |
| IC20 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP5 OFF (BAND10,11,12) |
| IC24 | FMC5 | 2 | +4.8V | BAND9 ON (RF:20M~40MHz) |
| IC24 | FMC5 | 2 | 0.0V | BAND9 OFF (RF:20M~40MHz) |
| IC25 | FMC5 | 2 | +4.8V | BAND8 ON (RF:10M~20MHz) |
| IC25 | FMC5 | 2 | 0.0V | BAND8 OFF (RF:10M~20MHz) |
| IC26 | FMC5 | 2 | +4.8V | BAND7 ON (RF:4M~10MHz) |

AR5000 FRONT UNIT DC VOLTAGE

| PARTS NO | NAME | PIN NO | LEVEL (V) | REMARKS |
|----------|------|--------|---------------|----------------------------------|
| IC26 | FMC5 | 2 | 0.0V | BAND7 OFF (RF:4M~10MHz) |
| IC27 | FMC5 | 2 | +4.8V | BAND6 ON (RF:2M~4MHz) |
| IC27 | FMC5 | 2 | 0.0V | BAND6 OFF (RF:2M~4MHz) |
| IC28 | FMC5 | 2 | +4.8V | BAND5 ON (RF:900K~2MHz) |
| IC28 | FMC5 | 2 | 0.0V | BAND5 OFF (RF:900K~2MHz) |
| IC29 | FMC5 | 2 | +4.8V | BAND4 ON (RF:500K~900KHz) |
| IC29 | FMC5 | 2 | 0.0V | BAND4 OFF (RF:500K~900KHz) |
| IC32 | FMC5 | 2 / 5 | +4.8V / +9.6V | AMP6 ON (BAND1,4,5,6,7,8,9) |
| IC32 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP6 OFF (BAND1,4,5,6,7,8,9) |
| IC53 | FMC5 | 2 | +4.4V | RF:10K~40MHz AMP ON / OFF |
| IC53 | FMC5 | 2 | 0.0V | EXCEPT RF:10K~40MHz AMP ON / OFF |
| IC53 | FMC5 | 1 | +9.7V | RF:10K~1GHz ATT OFF ON |
| IC53 | FMC5 | 1 | 0.0V | RF:10K~1GHz ATT OFF OFF |
| IC53 | FMC5 | 5 | +9.5V | RF:10K~40MHz ATT OFF ON |
| IC53 | FMC5 | 5 | 0.0V | RF:10K~40MHz ATT OFF OFF |
| IC52 | FMC5 | 2 | +4.4V | RF:40M~400MHz AMP ON |
| IC52 | FMC5 | 2 | +4.4V | RF:40M~230MHz AMP OFF |
| IC52 | FMC5 | 2 | 0.0V | EXCEPT RF:40M~400MHz AMP ON |
| IC52 | FMC5 | 2 | 0.0V | EXCEPT RF:40M~230MHz AMP OFF |
| IC52 | FMC5 | 1 | +9.7V | RF:10K~1GHz ATT OFF ON |
| IC52 | FMC5 | 1 | 0.0V | RF:10K~1GHz ATT OFF OFF |
| IC52 | FMC5 | 5 | +9.5V | RF:40M~400MHz ATT OFF ON |
| IC52 | FMC5 | 5 | 0.0V | RF:40M~400MHz ATT OFF OFF |
| IC40 | FMC5 | 2 | +4.4V | RF:400M~1GHz AMP ON |
| IC40 | FMC5 | 2 | 0.0V | EXCEPT RF:400M~1GHz AMP ON |
| IC40 | FMC5 | 1 | +9.7V | RF:10K~1GHz ATT OFF ON |
| IC40 | FMC5 | 1 | 0.0V | RF:10K~1GHz ATT OFF OFF |
| IC40 | FMC5 | 5 | +9.5V | RF:400M~1GHz ATT OFF ON |
| IC40 | FMC5 | 5 | 0.0V | RF:400M~1GHz ATT OFF OFF |
| IC39 | FMC5 | 2 | +4.4V | RF:10K~40MHz AMP ON / OFF |
| IC39 | FMC5 | 2 | 0.0V | EXCEPT RF:10K~40MHz AMP ON / OFF |
| IC39 | FMC5 | 1 | +9.7V | RF:10K~1GHz ATT ON ON |
| IC39 | FMC5 | 1 | 0.0V | RF:10K~1GHz ATT ON OFF |
| IC39 | FMC5 | 5 | +9.5V | RF:10K~40MHz ATT ON ON |
| IC39 | FMC5 | 5 | 0.0V | RF:10K~40MHz ATT ON OFF |
| IC38 | FMC5 | 2 | +4.4V | RF:40M~400MHz AMP ON |
| IC38 | FMC5 | 2 | +4.4V | RF:40M~230MHz AMP OFF |
| IC38 | FMC5 | 2 | 0.0V | EXCEPT RF:40M~400MHz AMP ON |
| IC38 | FMC5 | 2 | 0.0V | EXCEPT RF:40M~230MHz AMP OFF |
| IC38 | FMC5 | 1 | +9.7V | RF:10K~1GHz ATT ON ON |
| IC38 | FMC5 | 1 | 0.0V | RF:10K~1GHz ATT ON OFF |
| IC38 | FMC5 | 5 | +9.5V | RF:40M~400MHz ATT ON ON |
| IC38 | FMC5 | 5 | 0.0V | RF:40M~400MHz ATT ON OFF |
| IC37 | FMC5 | 2 | +4.4V | RF:400M~1GHz AMP ON |
| IC37 | FMC5 | 2 | 0.0V | EXCEPT RF:400M~1GHz AMP ON |
| IC37 | FMC5 | 1 | +9.7V | RF:10K~1GHz ATT ON ON |
| IC37 | FMC5 | 1 | 0.0V | RF:10K~1GHz ATT ON OFF |

AR5000 FRONT UNIT DC VOLTAGE

| PARTS NO, NAME | PIN NO | LEVEL (V) | REMARKS |
|----------------|--------|-----------|-------------------------|
| IC37 FMC5 | 5 | +9.5V | RF:400M~1GHz ATT ON ON |
| IC37 FMC5 | 5 | 0.0V | RF:400M~1GHz ATT ON OFF |

| PARTS NO, NAME | BASE | COLLECTOR | EMITTER | REMARKS |
|-----------------|-------|-----------|---------|------------------------------------|
| Q46 DTC124EK | +4.8V | +0.1V | GND | AIP AMP (BUFF) ON , RF:10K~230MHz |
| Q46 DTC124EK | 0.0V | +4.1V | GND | AIP AMP (BUFF) OFF , RF:10K~230MHz |
| Q45 2SC4536 | +2.8V | +9.2V | +2.0V | AIP AMP (BUFF) BIAS VOLTAGE |
| Q50 DTC124EK | +4.8V | 0.0V | GND | AIP AMP (BUFF) ON , RF:40M~230MHz |
| Q50 DTC124EK | 0.0V | +10V | GND | AIP AMP (BUFF) OFF , RF:40M~230MHz |
| Q44 DTC124EK | +4.8V | 0.0V | GND | AIP AMP (BUFF) ON , RF:10K~40MHz |
| Q44 DTC124EK | 0.0V | +10V | GND | AIP AMP (BUFF) OFF , RF:10K~40MHz |
| Q52 DTC124EK | +4.8V | 0.0V | GND | AMP2 , BAND16 ON (RF:1G~1.6GHz) |
| Q52 DTC124EK | 0.0V | +9.4V | GND | AMP2 , BAND16 OFF (RF:1G~1.6GHz) |
| Q53 DTC124EK | +4.8V | 0.0V | GND | AMP1 , BAND17 ON (RF:1G~1.6GHz) |
| Q53 DTC124EK | 0.0V | +9.4V | GND | AMP1 , BAND17 OFF (RF:1G~1.6GHz) |
| Q5,7 DTC124EK | +4.8V | + 0.1V | GND | BAND15 ON (RF:700M~1GHz) |
| Q5,7 DTC124EK | 0.0V | +10V | GND | BAND15 OFF (RF:700M~1GHz) |
| Q6,8 DTC124EK | +4.8V | + 0.1V | GND | BAND14 ON (RF:400M~700MHz) |
| Q6,8 DTC124EK | 0.0V | +10V | GND | BAND14 OFF (RF:400M~700MHz) |
| Q11 DTC124EK | +4.3V | 0.0V | GND | RF:400M~2.6GHz DBM2 ON |
| Q11 DTC124EK | 0.0V | +10V | GND | RF:400M~2.6GHz DBM2 OFF |
| Q12 DTC124EK | +4.8V | 0.0V | GND | RF:10K~400MHz DBM1 ON |
| Q12 DTC124EK | 0.0V | +10V | GND | RF:10K~400MHz DBM1 OFF |
| Q15 DTC124EK | +4.8V | 0.0V | GND | BAND13 ON (RF:230M~400MHz) |
| Q15 DTC124EK | 0.0V | +9.4V | GND | BAND13 OFF (RF:230M~400MHz) |
| Q16,17 DTC124EK | +4.8V | + 0.1V | GND | BAND12 ON (RF:150M~230MHz) |
| Q16,17 DTC124EK | 0.0V | +9.4V | GND | BAND12 OFF (RF:150M~230MHz) |
| Q18,19 DTC124EK | +4.8V | + 0.1V | GND | BAND11 ON (RF:90M~150MHz) |
| Q18,19 DTC124EK | 0.0V | +9.4V | GND | BAND11 OFF (RF:90M~150MHz) |
| Q20,21 DTC124EK | +4.8V | + 0.1V | GND | BAND10 ON (RF:40M~90MHz) |
| Q20,21 DTC124EK | 0.0V | +9.4V | GND | BAND10 OFF (RF:40M~90MHz) |
| Q23 DTC124EK | +4.8V | 0.0V | GND | AMP4 ON (BAND13:230M~400MHz) |
| Q23 DTC124EK | 0.0V | +10V | GND | AMP4 OFF (BAND13:230M~400MHz) |
| Q22 2SC3357 | +1.7V | +9.2V | +0.9V | AMP4 BIAS VOLTAGE |
| Q25,51 DTC124EK | +4.8V | 0.0V | GND | AMP5 ON (RF:40M~230MHz) |
| Q25,51 DTC124EK | 0.0V | +10V | GND | AMP5 OFF (RF:40M~230MHz) |
| Q24 2SC4536 | +1.6V | +9.0V | +0.8V | AMP5 BIAS VOLTAGE |
| Q27,28 DTC124EK | +4.8V | 0.1V | GND | BAND9 ON (RF:20M~40MHz) |
| Q27,28 DTC124EK | 0.0V | +9.4V | GND | BAND9 OFF (RF:20M~40MHz) |
| Q29,30 DTC124EK | +4.8V | 0.1V | GND | BAND8 ON (RF:10M~20MHz) |
| Q29,30 DTC124EK | 0.0V | +9.4V | GND | BAND8 OFF (RF:10M~20MHz) |
| Q31,32 DTC124EK | +4.8V | 0.1V | GND | BAND7 ON (RF:4M~10MHz) |
| Q31,32 DTC124EK | 0.0V | +9.4V | GND | BAND7 OFF (RF:4M~10MHz) |
| Q33,34 DTC124EK | +4.8V | 0.1V | GND | BAND6 ON (RF:2M~4MHz) |
| Q33,34 DTC124EK | 0.0V | +9.4V | GND | BAND6 OFF (RF:2M~4MHz) |
| Q35,36 DTC124EK | +4.8V | 0.1V | GND | BAND5 ON (RF:900K~2MMHz) |
| Q35,36 DTC124EK | 0.0V | +9.4V | GND | BAND5 OFF (RF:900K~2MHz) |

AR5000 FRONT UNIT DC VOLTAGE

| PARTS | NO, NAME | BASE | COLLECTOR | EMITTER | REMARKS |
|--------|----------|-------|-----------|---------|------------------------------|
| Q37,38 | DTC124EK | +4.8V | 0.1V | GND | BAND4 ON (RF:500K~900KHz) |
| Q37,38 | DTC124EK | 0.0V | +9.4V | GND | BAND4 OFF (RF:500K~900KHz) |
| Q47,48 | DTC124EK | +4.8V | 0.1V | GND | BAND1 ON (RF:10K~500KHz) |
| Q47,48 | DTC124EK | 0.0V | +9.4V | GND | BAND1 OFF (RF:10K~500KHz) |
| Q41,43 | DTC124EK | +4.8V | 0.1V | GND | AMP6 ON (BAND1,4,5,6,7,8,9) |
| Q41,43 | DTC124EK | 0.0V | +10V | GND | AMP6 OFF (BAND1,4,5,6,7,8,9) |
| Q42 | 2SC4536 | +1.6V | +9.2V | +0.8V | AMP6 BIAS VOLTAGE |

| PARTS | NO, NAME | GATE | DRAIN | SOURCE | REMARKS |
|--------|----------|----------------------------|--------|--------|---|
| Q10 | FSX52WF | -1.4V | +9.23V | GND | AMP3 ON (BAND14,15) |
| Q10 | FSX52WF | -1.4V | 0.0V | GND | AMP3 OFF (BAND14,15) |
| Q13,14 | 3SK232 | +3.67V (G2) +2.69V (G1) | +8.93V | +0.98V | AGC622 (AUDIO OUT : 12 SINAD) , BIAS VOLTAGE |

| PARTS | NO, NAME | ANODE | CATHODE | | REMARKS |
|-------|----------|-------|---------|--|-----------------------------------|
| D1 | 1S2837 | GND | +8.7V | | ANT2 (M-TYPE) |
| D3 | 1S2837 | GND | +8.7V | | RF:10K~400MHz,1.6G~2.6GHz |
| D5 | 1S2837 | GND | +8.7V | | RF:1G~1.6GHz |
| D6 | 1S2837 | GND | +8.7V | | RF:10K~40MHz,1.6G~2.6GHz |
| D259 | 1SS269 | +5.4V | +4.6V | | RF:40M~230MHz AIP (BUFF) AMP ON |
| D232 | 1SS269 | +5.4V | +4.6V | | RF:10K~40MHz AIP (BUFF) AMP ON |
| D233 | RN711H | +4.9V | +4.1V | | RF:10K~230MHz AIP (BUFF) AMP ON |
| D260 | RN711H | +5.7V | +4.9V | | 10K~230MHz AIP / 10K~40MHz AMP ON |
| D266 | RN711H | +5.3V | +4.5V | | ATT 0dB (RF:400M~1GHz) |
| D289 | 1SV196 | +4.8V | +4.1V | | ATT 10dB (RF:400M~1GHz) |
| D267 | 1SV196 | +5.7V | +5.0V | | ATT 10dB (RF:400M~1GHz) |
| D21 | RN711H | +5.4V | +4.6V | | BAND15 (RF:700M~1GHz) |
| D47 | 1SS269 | +5.0V | +4.2V | | BAND15 (RF:700M~1GHz) |
| D246 | 1SS269 | +5.8V | +5.0V | | BAND15 (RF:700M~1GHz) |
| D30 | RN711H | +5.4V | +4.6V | | BAND14 (RF:400M~700MHz) |
| D46 | 1SS269 | +5.0V | +4.2V | | BAND14 (RF:400M~700MHz) |
| D247 | 1SS269 | +5.8V | +5.0V | | BAND14 (RF:400M~700MHz) |
| D52 | 1SV196 | +5.4V | +4.7V | | 1st LOCAL ON |
| D50 | 1SV196 | +5.4V | +4.7V | | 1st IF ON |
| D51 | 1SV196 | +5.4V | +4.7V | | 1st LOCAL ON |
| D54 | 1SV196 | +5.4V | +4.7V | | 1st IF ON |
| D252 | 1SV196 | +0.7V | GND | | LESS THAN RF:7MHz |
| D277 | RN711H | +6.8V | +6.0V | | ATT 0dB (RF:40M~400MHz) |
| D276 | 1SV196 | +6.1V | +6.0V | | ATT 10dB (RF:40M~400MHz) |
| D278 | 1SV196 | +7.2V | +6.4V | | ATT 10dB (RF:40M~400MHz) |
| D56 | 1SV196 | +5.4V | +4.6V | | BAND13 (RF:230M~400MHz) |
| D65 | 1SV196 | +5.4V | +4.6V | | BAND12 (RF:150M~230MHz) |
| D74 | 1SS269 | +5.4V | +4.6V | | BAND12 (RF:150M~230MHz) |
| D75 | 1SV196 | +5.4V | +4.6V | | BAND11 (RF:90M~150MHz) |
| D84 | 1SS269 | +5.4V | +4.6V | | BAND11 (RF:90M~150MHz) |
| D85 | 1SV196 | +5.4V | +4.6V | | BAND10 (RF:40M~90MHz) |
| D102 | 1SS269 | +5.4V | +4.6V | | BAND10 (RF:40M~90MHz) |

AR5000 FRONT UNIT DC VOLTAGE

| PARTS NO, NAME | ANODE | CATHODE | | REMARKS |
|----------------|-----------|---------|--|--------------------------------|
| D103 RN711H | +5.3V | +4.5V | | AMP4 (RF:230M~400MHz) |
| D280 1SS269 | +5.4V | +4.6V | | AMP5 (RF:40M~230MHz) |
| D104 1SS269 | +5.3V | +4.5V | | AMP5 (RF:40M~230MHz) |
| D263 1SS143 | +6.7V | +5.9V | | ATT 0dB (RF:10K~40MHz) |
| D261 1SV196 | +6.0V | +5.3V | | ATT 10dB (RF:10K~40MHz) |
| D262 1SV196 | +7.0V | +6.3V | | ATT 10dB (RF:10K~40MHz) |
| D106 1SS143 | +4.3V | +3.6V | | BAND9 (RF:20M~40MHz) |
| D117 1SS269 | +5.4V | +4.6V | | BAND9 (RF:20M~40MHz) |
| D118 1SS143 | +4.3V | +3.6V | | BAND8 (RF:10M~20MHz) |
| D243 1SS269 | +5.4V | +4.6V | | BAND8 (RF:10M~20MHz) |
| D138 1SS143 | +4.3V | +3.6V | | BAND7 (RF:4M~10MHz) |
| D151 1SS269 | +5.4V | +4.6V | | BAND7 (RF:4M~10MHz) |
| D152 1SS143 | +4.3V | +3.6V | | BAND6 (RF:2M~4MHz) |
| D166 1SS269 | +5.4V | +4.6V | | BAND6 (RF:2M~4MHz) |
| D167 1SS143 | +4.3V | +3.6V | | BAND5 (RF:900K~2MHz) |
| D181 1SS269 | +5.4V | +4.6V | | BAND5 (RF:900K~2MHz) |
| D182 1SS143 | +4.3V | +3.6V | | BAND4 (RF:500K~900KHz) |
| D200 1SS269 | +5.4V | +4.6V | | BAND4 (RF:500K~900KHz) |
| D239 1SS143 | +4.3V | +3.6V | | BAND1 (RF:10K~500KHz) |
| D240 1SS269 | +5.4V | +4.6V | | BAND1 (RF:10K~500KHz) |
| D230 1SS269 | +5.4V | +4.6V | | AMP6 (RF:10K~40MHz) |
| D231 1SS269 | +4.9V | +4.1V | | AMP6 (RF:10K~40MHz) |
| D242 1S2837 | +4.9V (1) | +4.4V | | RF:10K~40MHz AMP ON |
| | +4.9V (2) | | | RF:10K~40MHz AMP OFF (AIP ON) |
| D241 1S2837 | +4.9V (1) | +4.4V | | RF:230M~400MHz AMP ON |
| | +4.9V (2) | | | RF:40M~230MHz AMP ON |
| D275 1S2837 | +4.9V (1) | +4.4V | | RF:40M~230MHz AMP OFF (AIP ON) |
| D238 1S2837 | +4.9V (2) | +4.4V | | RF:400M~1GHz AMP ON |

AR5000 PLL UNIT DC VOLTAGE

| PARTS NO, | NAME | PIN NO | LEVEL (V) | REMARKS |
|-----------|-----------|-----------|-----------------------|--|
| IC1 | MB1501 | 5 / 7 | +1.6V / +4.1V | WHEN PLL LOCKED |
| IC1 | MB1501 | 5 / 7 | 0.0V / 0.0V | WHEN PLL UNLOCKED |
| IC3 | MB1504 | 5 / 7 | +1.6V / +3.9V | WHEN PLL LOCKED |
| IC3 | MB1504 | 5 / 7 | 0.0V / 0.0V | WHEN PLL UNLOCKED |
| IC2 | TC4581F | 2 / 3 / 5 | +4.0V / +4.1V / +4.9V | WHEN PLL LOCKED |
| IC16 | S-8054HN | 2 / 3 | +4.9V / +4.9V | RESET FOR NCO |
| IC6 | UPC2709T | 4 / 6 | +5.3V / +5.3V | AMP FOR 2nd LOCAL (Fc=680MH LPF) |
| IC7 | UPC1675G | 3 | +5.7V | AMP FOR 2nd LOCAL (Fc=680MH LPF) |
| IC9 | UPC2709T | 4 / 6 | +5.5V / +5.5V | AMP FOR 1st LOCAL (Fc=1GHz LPF) |
| IC12 | UPC2709T | 4 / 6 | +4.6V / +4.6V | AMP FOR 1st LOCAL (Fc=1.4GHz LPF) |
| IC14 | UPC2709T | 4 / 6 | +4.6V / +4.6V | AMP FOR 1st LOCAL (Fc=1GHz LPF) |
| IC11 | UPC2709T | 4 / 6 | +4.7V / +4.7V | AMP FOR 1st LOCAL (Fc=1.5GHz BPF) |
| IC13 | UPC2709T | 4 / 6 | +4.7V / +4.7V | AMP FOR 1st LOCAL (Fc=1.1GHz BPF) |
| IC10 | UPC1675G | 3 | +5.5V | AMP FOR 1st LOCAL LOOP (Fc=1.3GHz LPF) |
| IC18 | UPD4017BG | 15 | +4.9V | SUBCARRIER OFF |
| IC18 | UPD4017BG | 15 | 0.0V | SUBCARRIER ON |
| Q23 | FMC5 | 2 / 5 | +4.8V / +5.8V | AMP ON FOR 1st LOCAL (Fc=1GHz LPF) |
| Q23 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF FOR 1st LOCAL (Fc=1GHz LPF) |
| Q24 | FMC5 | 2 / 5 | +4.8V / +5.8V | AMP ON FOR 1st LOCAL (Fc=1.4GHz LPF) |
| Q24 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF FOR 1st LOCAL (Fc=1.4GHz LPF) |
| Q25 | FMC5 | 2 / 5 | +4.8V / +5.8V | AMP ON FOR 1st LOCAL (Fc=1GHz LPF) |
| Q25 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF FOR 1st LOCAL (Fc=1GHz LPF) |
| Q26 | FMC5 | 2 / 5 | +4.8V / +5.8V | AMP ON FOR 1st LOCAL (Fc=1.5GHz BPF) |
| Q26 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF FOR 1st LOCAL (Fc=1.5GHz BPF) |
| Q27 | FMC5 | 2 / 5 | +4.8V / +5.8V | AMP ON FOR 1st LOCAL (Fc=1.1GHz BPF) |
| Q27 | FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF FOR 1st LOCAL (Fc=1.1GHz BPF) |
| Q33 | FMC5 | 2 / 5 | +4.8V / +9.1V | VCO (10K~30MHz) ON |
| Q33 | FMC5 | 2 / 5 | 0.0V / 0.0V | VCO (10K~30MHz) OFF |
| Q18 | FMC5 | 2 / 5 | +4.8V / +9.1V | VCO (30M~175M,675M~975M,1400M~1425M,1925M~2225MHz) ON |
| Q18 | FMC5 | 2 / 5 | 0.0V / 0.0V | VCO (30M~175M,675M~975M,1400M~1425M,1925M~2225MHz) OFF |
| Q19 | FMC5 | 2 / 5 | +4.8V / +9.1V | VCO (175M~340M,975M~1385M,1425M~1590M,2225M~2600MHz) ON |
| Q19 | FMC5 | 2 / 5 | 0.0V / 0.0V | VCO (175M~340M,975M~1385M,1425M~1590M,2225M~2600MHz) OFF |
| Q20 | FMC5 | 2 / 5 | +4.8V / +9.1V | VCO (340M~500M,1385M~1400M,1590M~1750MHz) ON |
| Q20 | FMC5 | 2 / 5 | 0.0V / 0.0V | VCO (340M~500M,1385M~1400M,1590M~1750MHz) OFF |
| Q21 | FMC5 | 2 / 5 | +4.8V / +9.1V | VCO (500M~675M,1750M~1925MHz) ON |
| Q21 | FMC5 | 2 / 5 | 0.0V / 0.0V | VCO (500M~675M,1750M~1925MHz) OFF |
| Q40 | FMC5 | 2 / 5 | +4.2V / +4.9V | INTERNAL OSC 12.8MHz ON |
| Q40 | FMC5 | 2 / 5 | 0.0V / 0.0V | EXTERNAL OSC 10.0MHz ON |

AR5000 PLL UNIT DC VOLTAGE

| PARTS | NO, NAME | BASE | COLLECTOR | EMITTER | REMARKS |
|-------|----------|--------|-----------|---------|---------------------------------|
| Q15 | 2SC1623 | +8.3V | +10V | +7.9V | DC POWER SUPPLY +10V TO +7.7V |
| Q4 | 2SC1623 | +4.8V | +5.0V | +4.1V | DC POWER SUPPLY +5.0V TO +4.3V |
| Q16 | 2SC1623 | +8.3V | +10V | +7.7V | DC POWER SUPPLY +10V TO +7.7V |
| Q17 | 2SC1623 | +4.9V | +5.0V | +4.2V | DC POWER SUPPLY +5.0V TO +4.3V |
| Q1 | 2SC1623 | 0.0V | +4.1V | GND | WHEN PLL LOCKED |
| Q1 | 2SC1623 | +0.6V | 0.1V | GND | WHEN PLL UNLOCKED |
| Q3 | 2SA812 | +4.1V | 0.0V | +4.1V | WHEN PLL LOCKED |
| Q3 | 2SA812 | +3.5V | +4.0V | +4.1V | WHEN PLL UNLOCKED |
| Q22 | 2SC1623 | +30.4V | +30.6V | +29.8V | DC POWER SUPPLY +30V TO +28V |
| Q10 | 2SC1623 | ---- | +14.7V | GND | WHEN PLL LOCKED |
| Q2 | 2SC1623 | 0.0V | +4.0V | GND | WHEN PLL LOCKED |
| Q2 | 2SC1623 | +0.6V | 0.1V | GND | WHEN PLL UNLOCKED |
| Q7 | 2SA812 | +3.8V | 0.0V | +4.0V | WHEN PLL LOCKED |
| Q7 | 2SA812 | +3.4V | +3.9V | +4.0V | WHEN PLL UNLOCKED |
| Q6 | 2SC1623 | +5.6V | +10V | +5.0V | DC POWER SUPPLY +10V TO +6.3V |
| Q9 | 2SC1623 | ---- | +3.2V | GND | WHEN PLL LOCKED |
| Q5 | 2SC1623 | +9.98V | +10V | +9.33V | DC POWER SUPPLY +10V TO +9.0V |
| Q28 | DTC124EK | +4.8V | +0.1V | GND | 1st LOCAL (Fc=1GHz LPF) ON |
| Q28 | DTC124EK | 0.0V | +9.8V | GND | 1st LOCAL (Fc=1GHz LPF) OFF |
| Q29 | DTC124EK | +4.8V | +0.1V | GND | 1st LOCAL (Fc=1.4GHz LPF) ON |
| Q29 | DTC124EK | 0.0V | +9.8V | GND | 1st LOCAL (Fc=1.4GHz LPF) OFF |
| Q30 | DTC124EK | +4.8V | +0.1V | GND | 1st LOCAL (Fc=1GHz LPF) ON |
| Q30 | DTC124EK | 0.0V | +9.8V | GND | 1st LOCAL (Fc=1GHz LPF) OFF |
| Q31 | DTC124EK | +4.8V | +0.1V | GND | 1st LOCAL (Fc=1.5GHz BPF) ON |
| Q31 | DTC124EK | 0.0V | +9.8V | GND | 1st LOCAL (Fc=1.5GHz BPF) OFF |
| Q32 | DTC124EK | +4.8V | +0.1V | GND | 1st LOCAL (Fc=1.1GHz BPF) ON |
| Q32 | DTC124EK | 0.0V | +9.8V | GND | 1st LOCAL (Fc=1.1GHz BPF) OFF |
| Q34 | 2SC1623 | +8.3V | +10V | +7.9V | DC POWER SUPPLY +10V TO +7.7V |
| Q35 | 2SC1623 | +4.9V | +5.0V | +4.2V | DC POWER SUPPLY +5.0V TO +4.3V |
| Q37 | DTC124EK | 0.0V | +4.9V | GND | SUBCARRIER OFF |
| Q37 | DTC124EK | +4.8V | 0.0V | GND | SUBCARRIER ON |
| Q36 | 2SC1009A | +2.3V | +9.9V | +1.6V | SUBCARRIER BUFFER AMP (FM MODE) |
| Q39 | 2SC1009A | +5.1V | +8.2V | +4.4V | SUBCARRIER PLL OSC (CW MODE) |
| Q38 | 2SC3356 | +2.3V | +4.4V | +1.6V | SUBCARRIER PLL OSC (CW MODE) |
| Q14 | 2SC1623 | +9.9V | +10V | +9.2V | DC POWER SUPPLY +10V TO +9.0V |
| Q41 | DTC124EK | +4.2V | 0.0V | GND | INTERNAL OSC 12.8MHz ON |
| Q43 | DTC323TK | +4.2V | 0.0V | GND | INTERNAL OSC 12.8MHz ON |
| Q41 | DTC124EK | 0.0V | +10V | GND | INTERNAL OSC 12.8MHz OFF |
| Q43 | DTC323TK | 0.0V | OPEN | GND | INTERNAL OSC 12.8MHz OFF |
| Q42 | DTC124EK | +4.8V | 0.0V | GND | EXTERNAL OSC 10.0MHz ON |
| Q42 | DTC124EK | 0.0V | +10V | GND | EXTERNAL OSC 10.0MHz OFF |
| Q44 | 2SC2759 | +0.7V | +4.4V | GND | AMP FOR INTERNAL OSC 12.8MHz |

AR5000 PLL UNIT DC VOLTAGE

| PARTS | NO, NAME | ANODE | CATHODE | REMARKS |
|--|----------|-------|---------|-------------------------------|
| D14,12 | RN711H | +5.3V | +4.5V | 1st LOCAL (Fc=1GHz LPF) ON |
| D15,11 | RN711H | +5.3V | +4.5V | 1st LOCAL (Fc=1.4GHz LPF) ON |
| D16 | RN711H | +5.3V | +4.5V | 1st LOCAL (Fc=1GHz LPF) ON |
| D17,10 | RN711H | +5.3V | +4.5V | 1st LOCAL (Fc=1.5GHz BPF) ON |
| D18,13 | RN711H | +5.3V | +4.5V | 1st LOCAL (Fc=1.1GHz BPF) ON |
| D23 | 1SV166 | GND | +3.12V | SUBCARRIER PLL OSC (CW MODE) |
| | | GND | +2.83V | SUBCARRIER PLL OSC (LSB MODE) |
| | | GND | +4.95V | SUBCARRIER PLL OSC (USB MODE) |
| CW PITCH : 1KHz CHECK POINT : C195---R106 | | | | |
| D20 | 1SV196 | +4.7V | +4.2V | VCO 1 (NIS--151) RF OUT 1 |
| D3 | 1SV196 | +4.9V | +4.2V | VCO 2 (NIS--152) RF OUT 2 |
| D1 | 1SV196 | +4.9V | +4.2V | VCO 2 (NIS--152) RF OUT 3 |
| D2 | 1SV196 | +4.9V | +4.2V | VCO 3 (NIS--153) RF OUT 4 |
| D4 | 1SV196 | +4.9V | +4.2V | VCO 3 (NIS--153) RF OUT 5 |
| D24 | 1SV196 | +5.4V | +4.7V | INTERNAL OSC 12.8MHz OUT |
| D25 | 1SV196 | +5.4V | +4.7V | EXTERNAL OSC 10.0MHz OUT |

AR5000 IF UNIT DC VOLTAGE

| PARTS NO, NAME | PIN NO | LEVEL (V) | REMARKS |
|----------------|-----------|--------------------------|---|
| Q16 FMC5 | 2 / 5 | +4.4V / +10V | AMP ON (IF:10.7MHz,BW:30K,110K,220KHz) |
| Q16 FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF (IF:10.7MHz,BW:30K,110K,220KHz) |
| Q17 FMC5 | 2 / 5 | +4.4V / +10V | AMP ON FOR EXTERNAL IF2 : 10.7MHz |
| Q17 FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF FOR EXTERNAL IF2 : 10.7MHz |
| Q18 FMC5 | 2 / 5 | +4.4V / +10V | AMP ON FOR EXTERNAL IF1 : 10.7MHz |
| Q18 FMC5 | 2 / 5 | 0.0V / 0.0V | AMP OFF FOR EXTERNAL IF1 : 10.7MHz |
| IC8 MC3372M | 16 | +1.73V | RX OFF (AGC455 TP5 : +4.5V) |
| Q19 FMC5 | 2 / 5 | +4.9V / +10V | FM DEVIATION ON : 7K,25K,50KHz |
| Q19 FMC5 | 2 / 5 | 0.0V / 0.0V | FM DEVIATION OFF : 7K,25K,50KHz |
| Q23 FMC5 | 1 / 2 / 5 | +7.7V / +4.9V / +7.7V | FM DEVIATION ON : 3.5KHz |
| Q23 FMC5 | 2 / 5 | +10V / 0.0V / 0.0V | FM DEVIATION OFF : 3.5KHz |
| Q24 FMC5 | 1 / 2 / 5 | +7.7V / +4.4V / +7.7V | FM DEVIATION ON : 1.75KHz , CW ON |
| Q24 FMC5 | 1 / 2 / 5 | +10V / 0.0V / 0.0V | FM DEVIATION OFF : 1.75KHz , CW OFF |
| IC10B UPC358G | 5 / 7 | +5.1V / +5.1V | EXTERNAL MUTE OFF |
| IC10A UPC358G | 1 / 3 | +5.1V / +5.1V | RX OFF |
| IC20A UPC358G | 1 / 2 / 3 | +3.9V / +2.5V / +2.5V | SQUELCH VOLUME FULL LEFT SPIN |
| IC20A UPC358G | 1 / 2 / 3 | +50mV / +2.3V / +2.2V | RX OFF |
| IC22A UPC358G | 1 / 2 / 3 | +1.2V / +2.2V / +2.2V | RX : 128.9MHz , -30dBm |
| IC22B UPC358G | 5 / 7 | +4.4V / +4.4V | VR4 : TP8 |
| IC23A UPC358G | 1 / 3 | +0.32V / +0.32V | LEVEL SQUELCH : 60 |
| IC23A UPC358G | 1 / 3 | +1.36V / +1.36V | RX : 128.9MHz , -108dBm , RF GAIN |
| IC23B UPC358G | 5 / 6 / 7 | +1.15V / +1.15V / +4.91V | RX : 128.9MHz , -108dBm , RF GAIN |
| IC23B UPC358G | 5 / 6 / 7 | +0.99V / +0.99V / +4.23V | RX : 128.9MHz , -30dBm |

| PARTS NO, NAME | BASE | COLLECTOR | EMITTER | REMARKS |
|----------------|-------|-------------|---------|---|
| Q9 DTC124EK | +4.4V | 0.0V | GND | BPF ON (IF:10.7MHz , BW : 0.5K,3KHz) |
| Q9 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:10.7MHz , BW : 0.5K,3KHz) |
| Q10 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:10.7MHz , BW : 6KHz) |
| Q10 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:10.7MHz , BW : 6KHz) |
| Q11 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:10.7MHz , BW : 15KHz) |
| Q11 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:10.7MHz , BW : 15KHz) |
| Q12 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:10.7MHz , BW : 30KHz) |
| Q12 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:10.7MHz , BW : 30KHz) |
| Q13 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:10.7MHz , BW : 110KHz) |
| Q13 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:10.7MHz ; BW : 110KHz) |
| Q14 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:10.7MHz , BW : 220KHz) |
| Q14 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:10.7MHz , BW : 220KHz) |
| Q15 DTC124EK | +4.4V | 0.0V | GND | AMP ON (IF:10.7MHz,BW:30K,110K,220KHz) |
| Q15 DTC124EK | 0.0V | +10V | GND | AMP OFF (IF:10.7MHz,BW:30K,110K,220KHz) |
| Q20 DTC124EK | +4.9V | C---E SHORT | GND | FM DEVIATION ON : 50KHz |
| Q20 DTC124EK | 0.0V | OPEN | GND | FM DEVIATION OFF : 50KHz |
| Q21 DTC124EK | +4.9V | C---E SHORT | GND | FM DEVIATION ON : 25KHz |
| Q21 DTC124EK | 0.0V | OPEN | GND | FM DEVIATION OFF : 25KHz |
| Q22 DTC124EK | +4.9V | C---E SHORT | GND | FM DEVIATION ON : 7KHz |
| Q22 DTC124EK | 0.0V | OPEN | GND | FM DEVIATION OFF : 7KHz |

AR5000 IF UNIT DC VOLTAGE

| PARTS NO, NAME | BASE | COLLECTOR | EMITTER | REMARKS |
|----------------|--------|-------------|---------|-----------------------------------|
| Q28 2SC1623 | +2.44V | +4.17V | +1.81V | SUBCARRIER (SSB,CW) DETECTOR |
| Q29 2SC1009A | +3.51V | +7.23V | +2.79V | BUFFER AMP (IF:455KHz) |
| Q32 2SC1623 | +5.09V | +9.74V | +4.51V | AGC (RX OFF) |
| Q31 2SC1623 | +0.42V | +3.71V | GND | AGC (RX : 128.9MHz , -30dBm) |
| Q31 2SC1623 | +0.35V | +4.76V | GND | AGC (RX : 128.9MHz , -108dBm) |
| Q30 DTC124EK | +4.9V | C---E SHORT | GND | AGC OFF |
| Q30 DTC124EK | 0.0V | OPEN | GND | AGC ON |
| Q33 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:455KHz , BW : 0.5KHz) |
| Q33 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:455KHz , BW : 0.5KHz) |
| Q34 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:455KHz , BW : 3KHz) |
| Q34 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:455KHz , BW : 3KHz) |
| Q35 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:455KHz , BW : 6KHz) |
| Q35 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:455KHz , BW : 6KHz) |
| Q36 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:455KHz , BW : 15KHz) |
| Q36 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:455KHz , BW : 15KHz) |
| Q37 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:455KHz , BW : 30KHz) |
| Q37 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:455KHz , BW : 30KHz) |
| Q38 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:455KHz , BW : 110KHz) |
| Q38 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:455KHz , BW : 110KHz) |
| Q39 DTC124EK | +4.9V | 0.0V | GND | BPF ON (IF:455KHz , BW : 220KHz) |
| Q39 DTC124EK | 0.0V | +10V | GND | BPF OFF (IF:455KHz , BW : 220KHz) |

| PARTS NO, NAME | GATE | DRAIN | SOURCE | REMARKS |
|----------------|-------------------------|--------|--------|--|
| Q3 2SK520 | 0.0V | +8.96V | +2.22V | BUFFER AMP (IF:10.7MHz) |
| Q5 3SK131 | +4.0V (2) +2.07V (1) | +9.55V | +2.35V | AMP (IF:10.7MHz) RX : OFF |
| Q4 3SK131 | +4.0V (2) +2.47V (1) | +8.74V | +2.46V | AMP FOR BPF (IF:10.7MHz) RX : OFF |
| Q6 3SK131 | +4.0V (2) +1.06V (1) | +9.99V | +1.34V | AMP FOR BPF (IF:10.7MHz , BW : 30K, 110K,220KHz) RX : OFF |
| Q7 3SK131 | +4.0V (2) +2.48V (1) | +8.89V | +2.47V | AMP (IF:10.7MHz MAIN) RX : OFF |
| Q8 3SK131 | +4.0V (2) +2.71V (1) | +9.11V | +2.78V | AMP (IF:10.7MHz EXTERNAL) RX : OFF |
| Q25,26 3SK131 | +4.5V (2) +2.43V (1) | +7.45V | +2.47V | AMP (IF:455KHz) RX : OFF |
| Q27 3SK131 | +4.5V (2) +2.04V (1) | +7.8V | +2.15V | AMP (IF:455KHz) RX : OFF |

| PARTS NO, NAME | ANODE | CATHODE | | REMARKS |
|----------------|-------|---------|--|-----------------------------------|
| D1 RN711H | +3.9V | +3.2V | | BPF (IF:10.7MHz , BW : 0.5K,3KHz) |
| D2 RN711H | +5.8V | +5.1V | | BPF (IF:10.7MHz , BW : 6KHz) |
| D3 RN711H | +5.1V | +4.4V | | BPF (IF:10.7MHz , BW : 15KHz) |
| D4 RN711H | +5.8V | +5.1V | | BPF (IF:10.7MHz , BW : 30KHz) |
| D5 RN711H | +5.1V | +4.4V | | BPF (IF:10.7MHz , BW : 110KHz) |
| D6 RN711H | +5.1V | +4.4V | | BPF (IF:10.7MHz , BW : 220KHz) |
| D10 RN711H | +4.0V | +3.3V | | BPF (IF:10.7MHz , BW : 0.5K,3KHz) |

AR5000 IF UNIT DC VOLTAGE

| PARTS NO, NAME | ANODE | CATHODE | | REMARKS |
|----------------|---------------|---------------|--|---|
| D11 RN711H | +4.8V | +4.0V | | BPF (IF:10.7MHz , BW : 6KHz) |
| D12 1SV196 | +7.1V | +6.5V | | BPF (IF:10.7MHz , BW : 15KHz) |
| D7 1SV196 | +4.6V | +4.0V | | BPF (IF:10.7MHz , BW : 30KHz) |
| D8 1SV196 | +2.8V | +2.1V | | BPF (IF:10.7MHz , BW : 110KHz) |
| D9 1SV196 | +3.5V | +2.9V | | BPF (IF:10.7MHz , BW : 220KHz) |
| D13 RN711H | +5.4V | +4.7V | | BPF (IF:10.7MHz , BW : 30K,110K,220KHz) |
| D14 RN711H | +5.4V | +4.6V | | EXTERNAL IF2 : 10.7MHz |
| D15 RN711H | +5.4V | +4.6V | | EXTERNAL IF1 : 10.7MHz |
| D16 1S2837 | +4.9V (1,2) | +4.4V | | BPF (IF:10.7MHz , BW : 0.5K,3KHz) |
| D17 HN2D01F | +4.9V (4,5,6) | +4.4V (1,2,3, | | BPF (IF:10.7MHz , BW : 30K,110K,220KHz) |
| D20 1S2837 | +1.73V (1) | +1.58V | | AGC455 : +4.5V (TP5) RX : OFF |
| D24 ND411G-1 | ---- | +0.42V (1) | | AGC (RX : 128.9MHz , -30dBm) |
| D24 ND411G-1 | ---- | +0.35V (1) | | AGC (RX : 128.9MHz , -108dBm) |
| D25 ND411G-1 | +0.69V (2) | +0.59V (3) | | AM DETECTOR , RX : OFF |
| | | +0.51V (1) | | |
| D21 1SS268 | +9.14V (1) | +8.41V (3) | | FM DEVIATION ON : 7K,25K,50KHz |
| | +6.91V (2) | +6.16V (3) | | FM DEVIATION ON : 3.5KHz |
| | +6.16V (2) | +5.42V (3) | | FM DEVIATION ON : 1.75KHz , CW ON |
| D22 HN2D01F | +4.9V (4,5,6) | +4.4V (1,2,3) | | FM DEVIATION ON : 1.75KHz , CW ON |
| D26 RN711H | +5.6V | +4.9V | | BPF (IF : 455KHz , BW : 0.5KHz) |
| D27 RN711H | +5.0V | +4.3V | | BPF (IF : 455KHz , BW : 0.5KHz) |
| D28 RN711H | +5.6V | +4.9V | | BPF (IF : 455KHz , BW : 3KHz) |
| D29 RN711H | +5.5V | +4.8V | | BPF (IF : 455KHz , BW : 3KHz) |
| D30 RN711H | +5.6V | +4.9V | | BPF (IF : 455KHz , BW : 6KHz) |
| D31 RN711H | +3.9V | +3.2V | | BPF (IF : 455KHz , BW : 6KHz) |
| D32 RN711H | +4.1V | +3.3V | | BPF (IF : 455KHz , BW : 15KHz) |
| D33 RN711H | +4.8V | +4.0V | | BPF (IF : 455KHz , BW : 15KHz) |
| D34 RN711H | +4.9V | +4.2V | | BPF (IF : 455KHz , BW : 30KHz) |
| D35 RN711H | +4.3V | +3.6V | | BPF (IF : 455KHz , BW : 30KHz) |
| D36 RN711H | +4.9V | +4.2V | | BPF (IF : 455KHz , BW : 110KHz) |
| D37 RN711H | +3.2V | +2.5V | | BPF (IF : 455KHz , BW : 110KHz) |
| D38 RN711H | +4.1V | +3.4V | | BPF (IF : 455KHz , BW : 220KHz) |
| D39 RN711H | +2.9V | +2.2V | | BPF (IF : 455KHz , BW : 220KHz) |
| D41 RB500H | +1.34V | +1.15V | | RX : 128.9MHz , -108dBm , RF GAIN |
| D41 RB500H | +1.18V | +0.99V | | RX : 128.9MHz , -30dBm |

AR5000 AUDIO POWER UNIT DC VOLTAGE

| PARTS NO, NAME | PIN NO | LEVEL (V) | REMARKS |
|----------------|-----------|-----------------------|-------------------------------------|
| IC12 LC73881M | 2 | +4.8V | DTMF OFF |
| IC12 LC73881M | 2 | +0.0V | DTMF ON |
| IC1 TC4W53F | 5 | +4.9V | RMT ON OR ALM ON (AUDIO CHOICE) |
| IC1 TC4W53F | 5 | 0.0V | RMT OFF OR ALM OFF (BEEP CHOICE) |
| IC3 TC4W53F | 5 | +4.9V | RMT ON OR ALM ON (E-VR CHOICE) |
| IC3 TC4W53F | 5 | 0.0V | RMT OFF OR ALM OFF (M-VR CHOICE) |
| IC6 TC4SU69F | 2 / 5 | +4.9V / 0.0V | WHEN PLL LOCKED |
| IC6 TC4SU69F | 2 / 5 | 0.0V / +4.9V | WHEN PLL UNLOCKED |
| IC13 TC4581F | 2 / 3 / 5 | 0.0V / 0.0V / 0.0V | WHEN PLL LOCKED , MUTE OFF |
| IC13 TC4581F | 2 / 3 / 5 | +4.5V / +4.5V / +4.8V | PLL UNLOCKED OR MUTE ON |
| Q5 FMC5 | 2 / 5 | +4.1V / +10V | WHEN PLL LOCKED, MUTE OFF : E-SW ON |
| Q5 FMC5 | 2 / 5 | 0.0V / OPEN | PLL UNLOCKED OR MUTE ON : E-SW OFF |
| IC8 PFA113AL | 1 / 4 / 5 | +1.1V / 4---5 SHORT | WHEN PLL LOCKED, MUTE OFF : E-SW ON |
| IC8 PFA113AL | 1 / 4 / 5 | OPEN / 4---5 OPEN | PLL UNLOCKED OR MUTE ON : E-SW OFF |
| IC9B UPC358G | 5 / 7 | +3.8V / +3.8V | RX : 128.9MHz , -50dBm |

| PARTS NO, NAME | BASE | COLLECTOR | EMITTER | REMARKS |
|----------------|-------|-----------|---------|------------------------------------|
| Q8 DTC124TK | 0.0V | +4.1V | GND | WHEN PLL LOCKED, MUTE OFF: E-SW ON |
| Q8 DTC124TK | +4.8V | 0.0V | GND | PLL UNLOCKED OR MUTE ON : E-SW OFF |

| PARTS NO, NAME | GATE | DRAIN | SOURCE | REMARKS |
|----------------|-------|-------------|--------|---|
| Q2 2SK160 | 0.0V | +4.57V | +0.38V | AUDIO BUFFER AMP |
| Q1 2SK680 | 0.0V | OPEN | GND | WHEN PLL LOCKED , MUTE OFF : AUDIO OUTPUT ON |
| Q1 2SK680 | +4.8V | 1---2 SHORT | GND | PLL UNLOCKED OR MUTE ON : AUDIO OUTPUT OFF |

| PARTS NO, NAME | ANODE | CATHODE | | REMARKS |
|----------------|------------------------|---------|--|------------------------------|
| D1 1S2837 | 0.0V (1) 0.0V (2) | 0.0V | | WHEN PLL LOCKED , MUTE OFF |
| D1 1S2837 | 0.0V (1) +4.9V (2) | +4.5V | | WHEN PLL LOCKED , MUTE ON |
| D1 1S2837 | +4.9V (1) 0.0V (2) | +4.5V | | WHEN PLL UNLOCKED , MUTE OFF |
| D1 1S2837 | +4.9V (1) +4.9V (2) | +4.5V | | WHEN PLL UNLOCKED , MUTE ON |

AR5000 POWER UNIT DC VOLTAGE

| PARTS NO, NAME | PIN NO | LEVEL (V) | REMARKS |
|----------------|-----------|-----------|----------------------|
| IC2 | KPL108 | 1 / 3 | +11.6V / -8.1V |
| IC6 | TA79L05F | 2 / 1 | -8.0V / -5.0V |
| IC3 | KPL130 | 1 / 3 | +11.5V / +30.7V |
| IC4 | S-81252PG | 2 / 1 | +11.7V / +5.2V |
| IC1 | S-8054HN | 2 / 3 | +7.8V / +3.6V (OPEN) |
| IC1 | S-8054HN | 2 / 3 | +3.8V~+4.2V / 0.0V |
| IC5 | S-81252PG | 2 / 1 | +11.7V / +5.2V |

| PARTS NO, NAME | BASE | COLLECTOR | EMITTER | REMARKS |
|----------------|----------|-----------|---------|---------|
| Q3 | 2SB624 | +10.9V | +11.6V | +11.6V |
| Q2 | DTC124EK | +4.9V | 0.0V | GND |
| Q2 | DTC124EK | 0.0V | +11.5V | GND |

| PARTS NO, NAME | GATE | DRAIN | SOURCE | REMARKS |
|----------------|--------|--------|--------|---------|
| Q1 | 2SJ330 | 0.0V | +11.6V | +11.7V |
| Q1 | 2SJ330 | +11.7V | OPEN | +11.7V |

| PARTS NO, NAME | ANODE | CATHODE | | REMARKS |
|----------------|--------|---------|--------|---------|
| D1 | 1S2837 | +5.2V | +4.7V | |
| D2 | 3GWJ42 | +12V | +11.7V | |

AR5000 FRONT UNIT RF / IF (10.7MHz , 622.4MHz) LEVEL

OUTPUT CONDITIONS : 12 SINAD (AUDIO LEVEL) , RX : AM (60 % ,BW:6KHz) ,FM (3.5KHz,BW:15KHz)

| PARTS NO, NAME | CHECK POINT | LEVEL (dBm) | INSPECTION ITEMS |
|----------------|-------------|-------------|--|
| K1 RK1-9V | 14:INPUT | -109dBm | BAND1 (10K~500KHz) RX : 250KHz (AM) |
| D230 1SS269 | ANODE | -108dBm | |
| K1 RK1-9V | 14:INPUT | -108dBm | BAND6 (2M~4MHz) RX : 3MHz (AM) |
| D230 1SS269 | ANODE | -110dBm | |
| K1 RK1-9V | 14:INPUT | -98dBm | BAND9 (20M~40MHz) RX : 30MHz (AM) |
| D230 1SS269 | ANODE | -108dBm | |
| K1 RK1-9V | 14:INPUT | -116dBm | BAND10 (40M~90MHz) RX : 57.5MHz (FM) |
| D280 1SS269 | ANODE | -117dBm | |
| K1 RK1-9V | 14:INPUT | -117dBm | BAND11 (90M~150MHz) RX : 112.5MHz (FM) |
| D280 1SS269 | ANODE | -117dBm | |
| K1 RK1-9V | 14:INPUT | -116dBm | BAND12 (150M~230MHz) RX : 190MHz (FM) |
| D280 1SS269 | ANODE | -110dBm | |
| K1 RK1-9V | 14:INPUT | -116dBm | BAND13 (230M~400MHz) RX : 315MHz (FM) |
| D62 1SV163 | ANODE | -118dBm | |
| K1 RK1-9V | 14:INPUT | -117dBm | BAND14 (400M~700MHz) RX : 550MHz (FM) |
| D246 1SS269 | ANODE | -120dBm | |
| K1 RK1-9V | 14:INPUT | -117dBm | BAND15 (700M~1GHz) RX : 850MHz (FM) |
| D246 1SS269 | ANODE | -121dBm | |
| K1 RK1-9V | 14:INPUT | -120dBm | BAND16 (1G~1.6GHz) RX : 1.3GHz (FM) |
| DBM2 5MXB25-75 | 1 | -87dBm | AMP2 (1G~1.6GHz) |
| D230 1SS269 | ANODE | -108dBm | AMP6 (10K~40MHz) RX : 250KHz (AM) |
| D232 1SS269 | ANODE | -98dBm | |
| D230 1SS269 | ANODE | -110dBm | AMP6 (10K~40MHz) RX : 3MHz (AM) |
| D232 1SS269 | ANODE | -102dBm | |
| D230 1SS269 | ANODE | -108dBm | AMP6 (10K~40MHz) RX : 30MHz (AM) |
| D232 1SS269 | ANODE | -102dBm | |
| D280 1SS269 | ANODE | -117dBm | AMP5 (40M~230MHz) RX : 57.5MHz (FM) |
| D259 1SS269 | ANODE | -104dBm | |
| D280 1SS269 | ANODE | -117dBm | AMP5 (40M~230MHz) RX : 112.5MHz (FM) |
| D259 1SS269 | ANODE | -102dBm | |
| D280 1SS269 | ANODE | -110dBm | AMP5 (40M~230MHz) RX : 190MHz (FM) |
| D259 1SS269 | ANODE | -104dBm | |
| D62 1SV163 | ANODE | -118dBm | AMP4 (230M~400MHz) RX : 315MHz (FM) |
| DBM1 5MXB24-7 | 1 | -95dBm | |
| D246 1SS269 | ANODE | -120dBm | AMP3 (400M~1GHz) RX : 550MHz (FM) |
| DBM2 5MXB25-75 | 1 | -102dBm | |
| D246 1SS269 | ANODE | -121dBm | AMP3 (400M~1GHz) RX : 850MHz (FM) |
| DBM2 5MXB25-75 | 1 | -95dBm | |
| D54 1SV196 | ANODE:INPUT | -110dBm | IF : 622.4MHz (FM) |
| R351 0 Ω | T2 SIDE | -96dBm | AMP (Fc : 622.4MHz) |
| R71 0 Ω | T2 SIDE | -92dBm | BPF (Fc : 622.4MHz) |
| R352 0 Ω | T3 SIDE | -93dBm | AMP (Fc : 622.4MHz) |
| DBM3 5MXB24-7 | 2 | -94dBm | BPF (Fc : 622.4MHz) |

AR5000 FRONT UNIT RF / IF (10.7MHz , 622.4MHz) LEVEL

OUTPUT CONDITIONS : 12 SINAD (AUDIO LEVEL), RX : AM (60 % ,BW:6KHz) ,FM (3.5KHz,BW:15KHz)

| PARTS NO, NAME | CHECK POINT | LEVEL (dBm) | INSPECTION ITEMS |
|----------------|-------------|-------------|--|
| K1 RK1-9V | 14:INPUT | -50dBm | RX : 128.9MHz (FM) |
| J2 TMP-J01X-V6 | 1 | -37.2dBm | OUTPUT (IF :10.7MHz) : Z=50(OUTPUT OPEN) |

INPUT CONDITIONS : RX OFF (FROM SIGNAL GEN), AM (60 % ,BW:6KHz) ,FM (3.5KHz,BW:15KHz)

| PARTS NO, NAME | CHECK POINTS | LEVEL (dBm) | INSPECTION ITEMS | KEY OPERATIONS |
|----------------|--------------|------------------|----------------------------------|------------------|
| VCO4 SMOP611 | 4 | -3.6dBm | VCO:2ndLOC 611.7MHz | RF:128.9MHz , FM |
| IC6 UPC2709T | 1 / 4 | -20.8 / +1.9dBm | AMP:2ndLOC 611.7MHz | RF:128.9MHz , FM |
| L17 15nH | L17---R14 | +2.6dBm | LPF (Fc=680MHz) | RF:128.9MHz , FM |
| J2 TMP-J01X-V6 | 1 | +1.4dBm | ATT:1dB | RF:128.9MHz , FM |
| J2 TMP-J01X-V6 | 1 | +5.6dBm | Z=50(OUTPUT OPEN) | RF:128.9MHz , FM |
| IC7 UPC1675G | 4 / 2 | -8.6 / -2.8dBm | AMP:2ndLOC 611.7MHz | RF:128.9MHz , FM |
| L20 8.8nH | L20---R51 | -1.7dBm | LPF (Fc=680MHz) | RF:128.9MHz , FM |
| DBM1 5MXB24-7 | 3 | -4.3dBm | ATT:1dB | RF:128.9MHz , FM |
| DBM1 5MXB24-7 | 1 / 2 | -8.7 / -23.5dBm | NCO (5.9MHz) , DBM (617.6MHz) | RF:128.9MHz , FM |
| IC8 UPC1675G | 4 | -34.5dBm | BPF (Fc=620.45MHz) | RF:128.9MHz , FM |
| IC8 UPC1675G | 2 | -8.9dBm | AMP (617.6MHz) | RF:128.9MHz , FM |
| IC3 MB1504 | 8 | -12.9dBm | BPF (Fc=620.45MHz) | RF:128.9MHz , FM |
| IC1 MB1501 | 8 | -2.1dBm | LOOP FRQ (751.3MHz) | RF:128.9MHz , FM |
| VCO1 NIS-151 | 5 | +3.5dBm | VCO (637.4MHz) | RF:15MHz , AM |
| D20 1SV196 | A / C | -6.7 / -7.5dBm | VCO (637.4MHz) | RF:15MHz , AM |
| D3 1SV196 | A / C | -6.3 / -7.3dBm | VCO (722.4MHz) | RF:100MHz , FM |
| D1 1SV196 | A / C | -6.5 / -7.3dBm | VCO (872.4MHz) | RF:250MHz , FM |
| D2 1SV196 | A / C | -7.0 / -7.5dBm | VCO (1032.4MHz) | RF:410MHz , FM |
| D4 1SV196 | A / C | -6.3 / -7.4dBm | VCO (1202.4MHz) | RF:580MHz , FM |
| R62 10 Ω | C26---R62 | -7.1dBm | VCO (792.4MHz) | RF:170MHz , FM |
| R62 10 Ω | C26---R62 | -8.4dBm | VCO (1122.4MHz) | RF:500MHz , FM |
| R62 10 Ω | C26---R62 | -6.5dBm | VCO (721.2MHz) | RF:820MHz , FM |
| R62 10 Ω | C26---R62 | -7.6dBm | VCO (861.2MHz) | RF:1100MHz , FM |
| D14 RN711H | A / C | -18 / -18.2dBm | VCO (792.4MHz) | RF:170MHz , FM |
| D15 RN711H | A / C | -21 / -20.8dBm | VCO (1122.4MHz) | RF:500MHz , FM |
| D16 RN711H | A / C | -14.1 / -14.6dBm | VCO (721.2MHz) | RF:820MHz , FM |
| D16 RN711H | A / C | -19 / -19.4dBm | VCO (861.2MHz) | RF:1100MHz , FM |
| IC9 UPC2709T | 4 | +2.1dBm | AMP (792.4MHz) | RF:170MHz , FM |
| IC12 UPC2709T | 4 | -0.8dBm | AMP (1122.4MHz) | RF:500MHz , FM |
| IC14 UPC2709T | 4 | +1.6dBm | AMP (721.2MHz) | RF:820MHz , FM |
| IC14 UPC2709T | 4 | -0.7dBm | AMP (861.2MHz) | RF:1100MHz , FM |
| D12 RN711H | C / A | +3.8 / -3.2dBm | LPF (792.4MHz) | RF:170MHz , FM |
| D11 RN711H | C / A | -2.2 / -2.4dBm | LPF (1122.4MHz) | RF:500MHz , FM |
| FDB1 5FDB-1 | 3 | +1.8dBm | LPF (721.2MHz) | RF:820MHz , FM |
| FDB1 5FDB-1 | 3 | -3.3dBm | LPF (861.2MHz) | RF:1100MHz , FM |
| FDB1 5FDB-1 | 1 | -13.4dBm | DOUBLER (1442.4MHz) | RF:820MHz , FM |
| FDB1 5FDB-1 | 1 | -18.9dBm | DOUBLER (1722.4MHz) | RF:1100MHz , FM |
| IC11 UPC2709T | 1 / 4 | -16.8 / +0.3dBm | AMP (1442.4MHz) | RF:820MHz , FM |
| IC13 UPC2709T | 1 / 4 | -13.1 / -1.3dBm | AMP (1722.4MHz) | RF:1100MHz , FM |
| D10 RN711H | C / A | -1.7 / -1.3dBm | BPF (1442.4MHz) | RF:820MHz , FM |
| D13 RN711H | C / A | -5.7 / -2.5dBm | BPF (1722.4MHz) | RF:1100MHz , FM |
| R55 3.3 Ω | R55---J1 | +2dBm | ATT:1dB (792.4MHz) | RF:170MHz , FM |
| R55 3.3 Ω | R55---J1 | -2.5dBm | ATT:1dB (1122.4MHz) | RF:500MHz , FM |
| R55 3.3 Ω | R55---J1 | -2.4dBm | ATT:1dB (1442.4MHz) | RF:820MHz , FM |

AR5000 PLL UNIT STD (10M/12.8MHz) OSC / VCO / SUBCAR / 1st,2nd LOCAL LEVEL

INPUT CONDITIONS : RX OFF (FROM SIGNAL GEN) , AM (60 % ,BW:6KHz) ,FM (3.5KHz,BW:15KHz)

| PARTS NO, NAME | CHECK POINTS | LEVEL (dBm) | INSPECTION ITEMS | KEY OPERATIONS |
|----------------|--------------|---------------|--------------------------------|---------------------------------------|
| R55 3.3 Ω | R55---J1 | -5.9dBm | ATT:1dB (1722.4MHz) | RF:1100MHz , FM |
| IC10 UPC1675G | 4 / 2 | -12 / -2.8dBm | AMP (792.4MHz) | RF:170MHz , FM |
| IC10 UPC1675G | 4 / 2 | -15 / -6.9dBm | AMP (1122.4MHz) | RF:500MHz , FM |
| IC1 MB1501 | 8 | -2.1dBm | LOOP LPF (792.4MHz) | RF:170MHz , FM |
| IC1 MB1501 | 8 | -8.6dBm | LOOP LPF (1122.4MHz) | RF:500MHz , FM |
| R111 0 Ω | R111---L60 | +4.2dBm | PLL OSC (4.54MHz) | RF:128.9MHz , CW |
| IC1 MB1501 | 8 | +2.2dBm | LOOP LPF (4.54MHz) | RF:128.9MHz , CW |
| Q36 2SC1009A | EMITTER (1) | +1.1dBm | BUFF AMP (454KHz) | RF:128.9MHz , CW |
| L64 100uH | L64---C204 | -1.5dBm | LPF (454KHz) | RF:128.9MHz , CW |
| J3 TMP-J01X-V6 | 1 | -3.6dBm | LPF (454KHz) | RF:128.9MHz , CW |
| J3 TMP-J01X-V6 | 1 | -3.3dBm | Z=50(OUTPUT OPEN) | RF:128.9MHz , CW |
| Q44 2SC2759 | COLLECTOR (3 | -3.6dBm | TANK CIRCUIT (WAVE:12.8MHz) | RF:128.9MHz , FM , INT STD:12.8MHz |
| D24 1SV196 | ANODE | -3.6dBm | | |
| L66 560nH | L66---C220 | -7.2dBm | LPF (SINE WAVE OUT) | INT STD:12.8MHz |
| J4 TMP-J01X-V6 | 1 | 0.0dBm | EXTERNAL INPUT | RF:128.9MHz , FM , EXT STD:10MHz |
| L68 680nH | L68---C225 | -1.2dBm | LPF (WAVE:10MHz) | EXT STD:10MHz |
| D25 1SV196 | ANODE | -1.9dBm | | |
| L66 560nH | L66---C220 | -7.6dBm | LPF (SINE WAVE OUT) | EXT STD:10MHz |

AR5000 IF UNIT IF(455KHz, 10.7MHz) LEVEL

INPUT (J7) CONDITION S : IF1 (10.7MHz, -107dBm, AM : 60 %)
 : IF2 (10.7MHz, -107dBm, CW)
 : IF3 (10.7MHz, -107dBm, FM : 1.75KHz)
 : IF4 (10.7MHz, -107dBm, FM : 3.5KHz)
 : IF5 (10.7MHz, -107dBm, FM : 7KHz)
 : IF6 (10.7MHz, -107dBm, FM : 25KHz)
 : IF7 (10.7MHz, -107dBm, FM : 50KHz)

OUTPUT CONDITION : 12 SINAD (AUDIO LEVEL)

| PARTS NO, NAME | CHECK POINT | LEVEL (dBm) | INSPECTION ITEMS | KEY OPERATIONS | NO. |
|----------------|-------------|-------------|--------------------|----------------|-----|
| Q3 2SK520 | SOURCE (2) | -109dBm | BUFF AMP | FM (BW:15KHz) | IF4 |
| T1 KE-07651 | 4 | -110dBm | TRANSFORMER | FM (BW:15KHz) | IF4 |
| D1 RN711H | ANODE | -98dBm | AMP (Q4) | CW (BW:3KHz) | IF2 |
| D2 RN711H | ANODE | -96dBm | AMP (Q4) | FM (BW:6KHz) | IF3 |
| D3 RN711H | ANODE | -95dBm | AMP (Q4) | FM (BW:15KHz) | IF4 |
| D4 RN711H | ANODE | -81dBm | AMP (Q4) | FM (BW:30KHz) | IF5 |
| D5 RN711H | ANODE | -89dBm | AMP (Q4) | FM (BW:110KHz) | IF6 |
| D6 RN711H | ANODE | -88dBm | AMP (Q4) | FM (BW:220KHz) | IF7 |
| D10 RN711H | ANODE | -102dBm | BPF (BW:3KHz) | CW (BW:3KHz) | IF2 |
| D11 RN711H | ANODE | -102dBm | BPF (BW:6KHz) | FM (BW:6KHz) | IF3 |
| D12 1SV196 | ANODE | -102dBm | BPF (BW:15KHz) | FM (BW:15KHz) | IF4 |
| D7 1SV196 | ANODE | -102dBm | BPF (BW:30KHz) | FM (BW:30KHz) | IF5 |
| D8 1SV196 | ANODE | -102dBm | BPF (BW:110KHz) | FM (BW:110KHz) | IF6 |
| D9 1SV196 | ANODE | -102dBm | BPF (BW:220KHz) | FM (BW:220KHz) | IF7 |
| D13 RN711H | ANODE | -94dBm | AMP (Q6) | FM (BW:220KHz) | IF7 |
| T7 KE-07496-1 | 4 | -69dBm | AMP (Q7) | FM (BW:15KHz) | IF4 |
| D28 RN711H | ANODE | -87dBm | MIXER 455KHz (IC8) | CW (BW:3KHz) | IF2 |
| D30 RN711H | ANODE | -82dBm | MIXER 455KHz (IC8) | FM (BW:6KHz) | IF3 |
| D32 RN711H | ANODE | -84dBm | MIXER 455KHz (IC8) | FM (BW:15KHz) | IF4 |
| D34 RN711H | ANODE | -84dBm | MIXER 455KHz (IC8) | FM (BW:30KHz) | IF5 |
| D36 RN711H | ANODE | -84dBm | MIXER 455KHz (IC8) | FM (BW:110KHz) | IF6 |
| D38 RN711H | ANODE | -83dBm | MIXER 455KHz (IC8) | FM (BW:220KHz) | IF7 |
| D29 RN711H | ANODE | -86dBm | BPF (BW:3KHz) | CW (BW:3KHz) | IF2 |
| D31 RN711H | ANODE | -86dBm | BPF (BW:6KHz) | FM (BW:6KHz) | IF3 |
| D33 RN711H | ANODE | -86dBm | BPF (BW:15KHz) | FM (BW:15KHz) | IF4 |
| D35 RN711H | ANODE | -86dBm | BPF (BW:30KHz) | FM (BW:30KHz) | IF5 |
| D37 RN711H | ANODE | -86dBm | BPF (BW:110KHz) | FM (BW:110KHz) | IF6 |
| D39 RN711H | ANODE | -86dBm | BPF (BW:220KHz) | FM (BW:220KHz) | IF7 |
| VR1 10K Ω | 2 | -86dBm | AMP (Q25) :TP1 | AM (BW:6KHz) | IF1 |
| T11 KE-04980 | 3 | -54dBm | AMP (Q26) | AM (BW:6KHz) | IF1 |
| C113 22pF | C113---R139 | -32dBm | AMP (Q27) | AM (BW:6KHz) | IF1 |
| Q29 2SC1009A | EMITTER (1) | -5dBm | AMP (Q29) | AM (BW:6KHz) | IF1 |

AR5000 REPAIR FLOW CHART

1. PLL ERROR

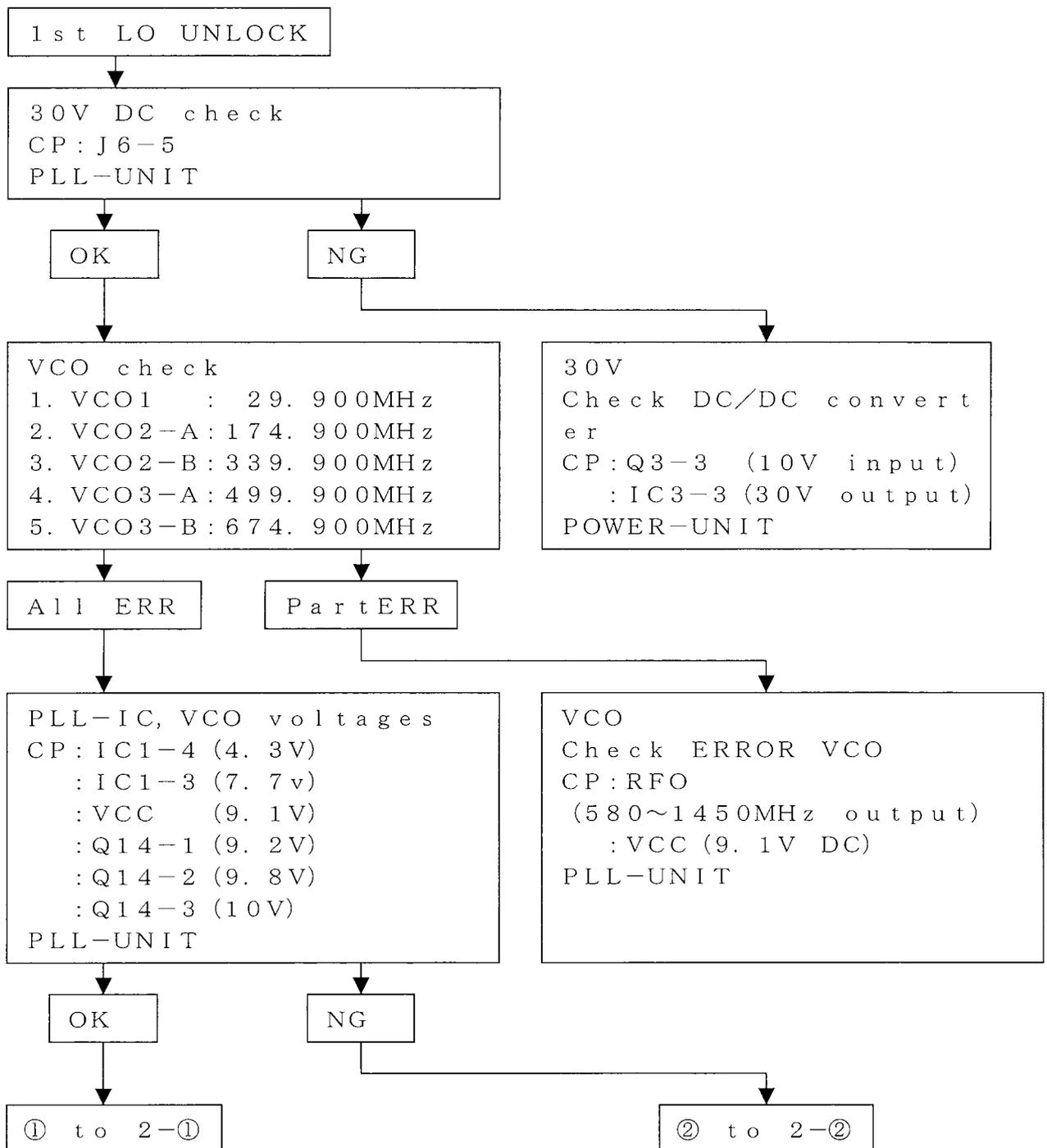
1-1. Cause of PLL ERROR

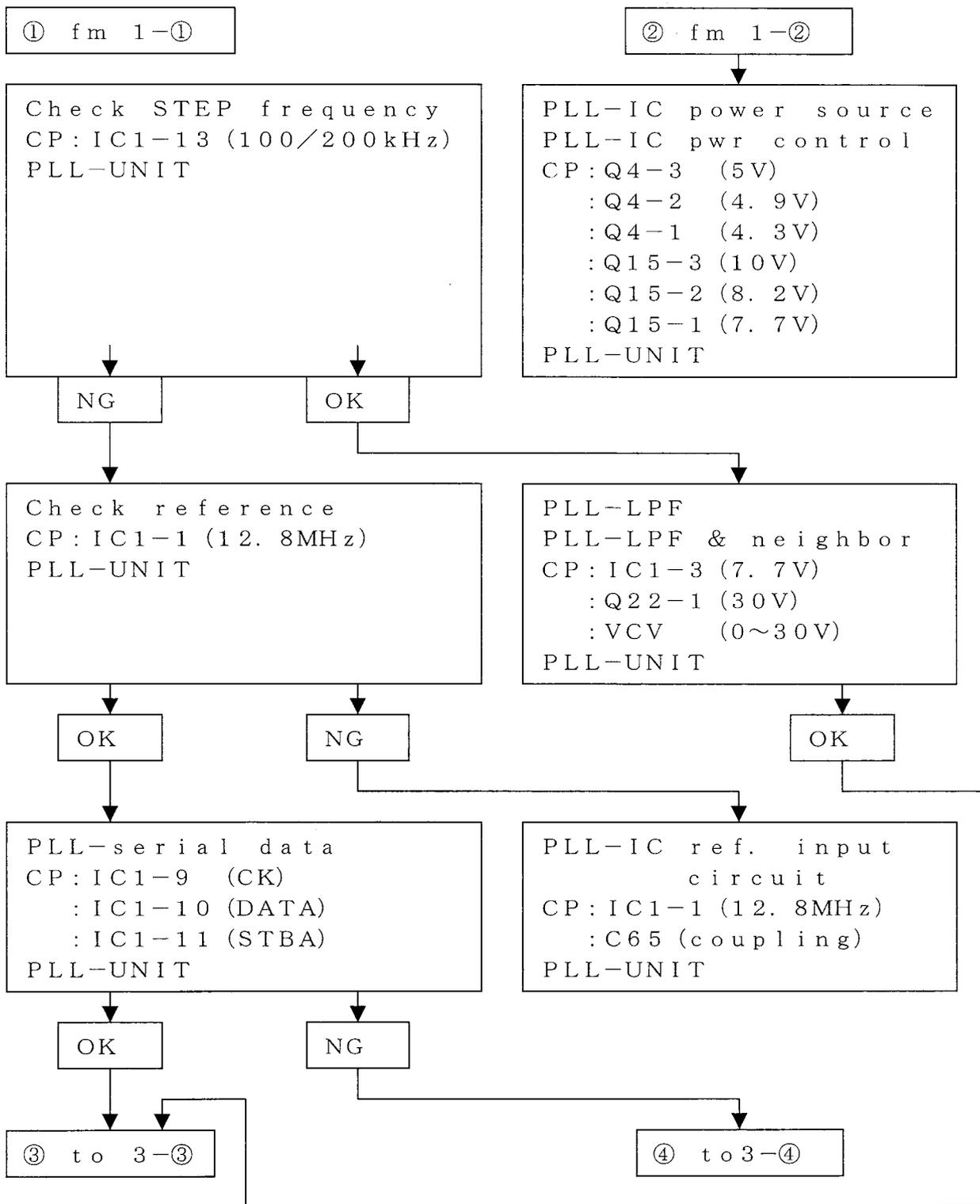
- ① Unlock 1st local injection only
- ② Unlock 2nd local injection only
- ③ Unlock both local injections

1-2. Finding a defective point

1-2-1. Unlock 1st local injection only

CP: check point





③ fm 2-③

PLL-IC RF input/signal
CP: IC1-8 (580~1450MHz)
PLL-UNIT

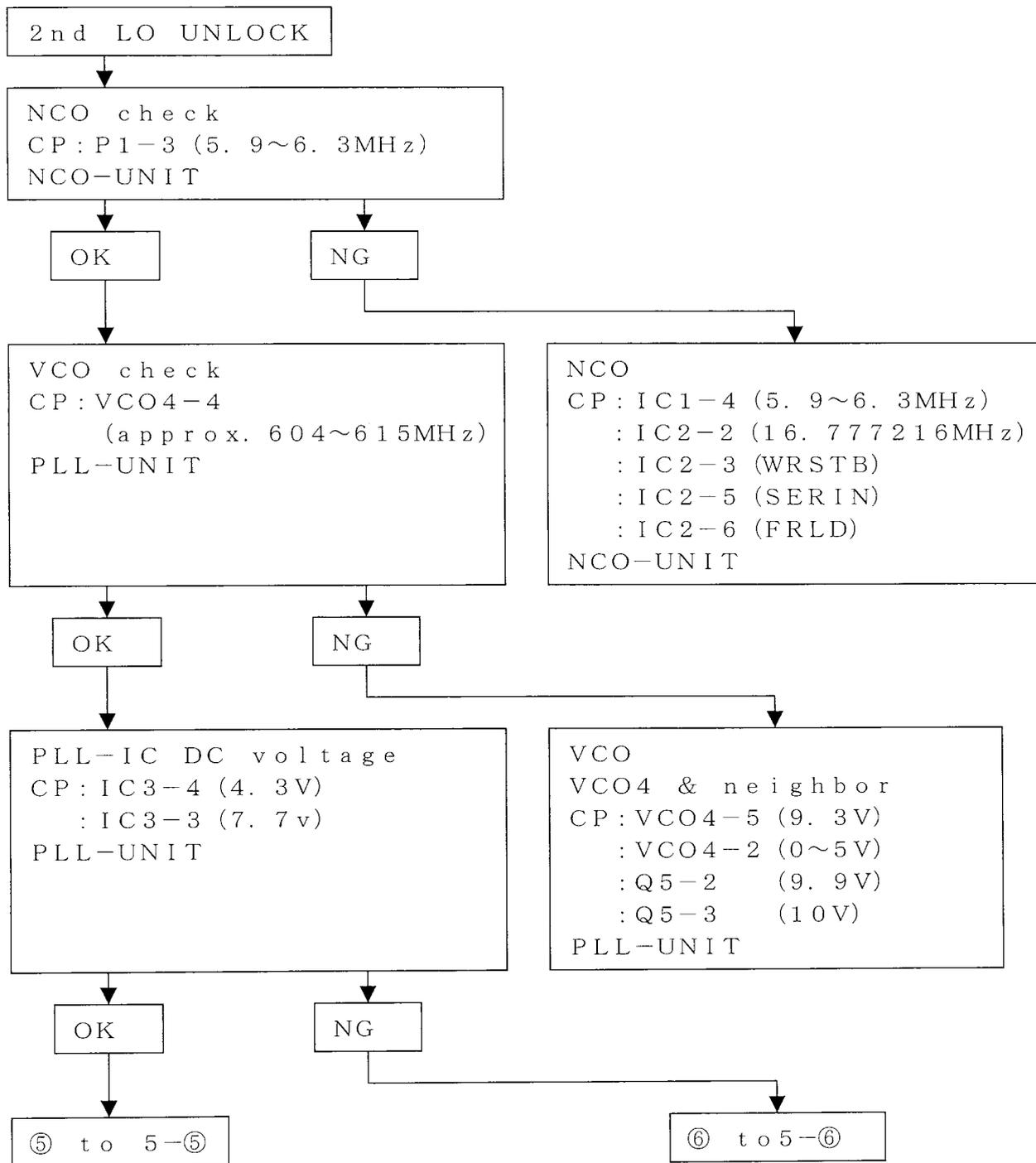
NG

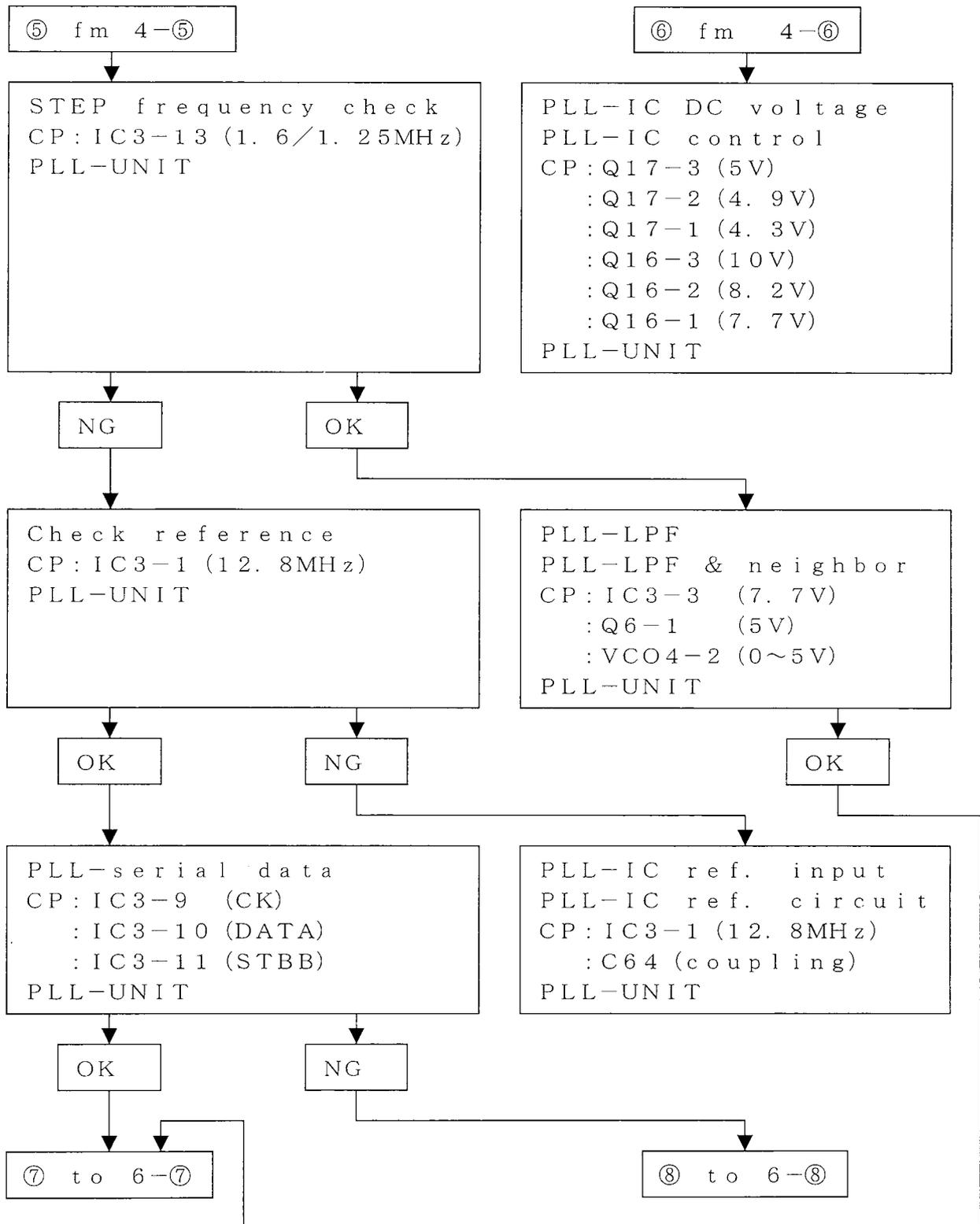
PLL-IC RF input
PLL-IC RF neighbor
CP: FILTER (A)
PLL-UNIT

④ fm 2-④

PLL-serial data
PLL-neighbor circuit
CP: IC1-9 (CK)
: IC1-10 (DATA)
: IC1-11 (STBA)
: D6-3 (CK)
: D6-2 (DATA)
: D6-1 (STBA)
PLL-UNIT

1-2-2. 2nd local UNLOCK
 CP: check point





⑦ fm 5-⑦

PLL-IC
RF input signal
CP: IC3-8
(approx. 609~622MHz)
PLL-UNIT

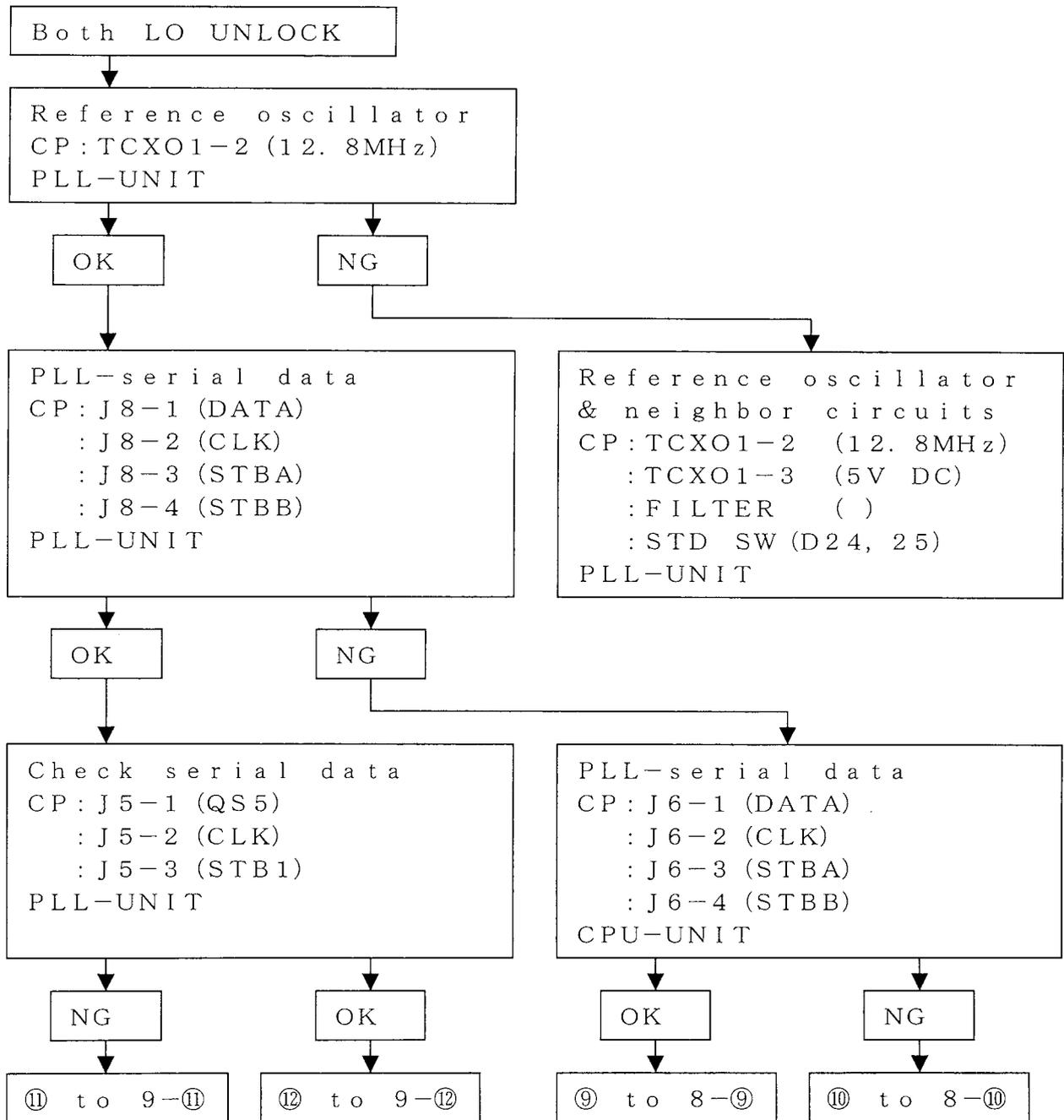
NG

PLL-IC RF input
PLL-IC RF neighbors
CP: FILTER (H)
: FILTER (J)
: DBM1
PLL-UNIT

⑧ fm 5-⑧

PLL-serial data
PLL-neighbors
CP: IC3-9 (CK)
: IC3-10 (DATA)
: IC3-11 (STBB)
: D7-3 (CK)
: D7-2 (DATA)
: D7-1 (STBB)
PLL-UNIT

1-2-3. Both Local UNLOCK
 CP: check point

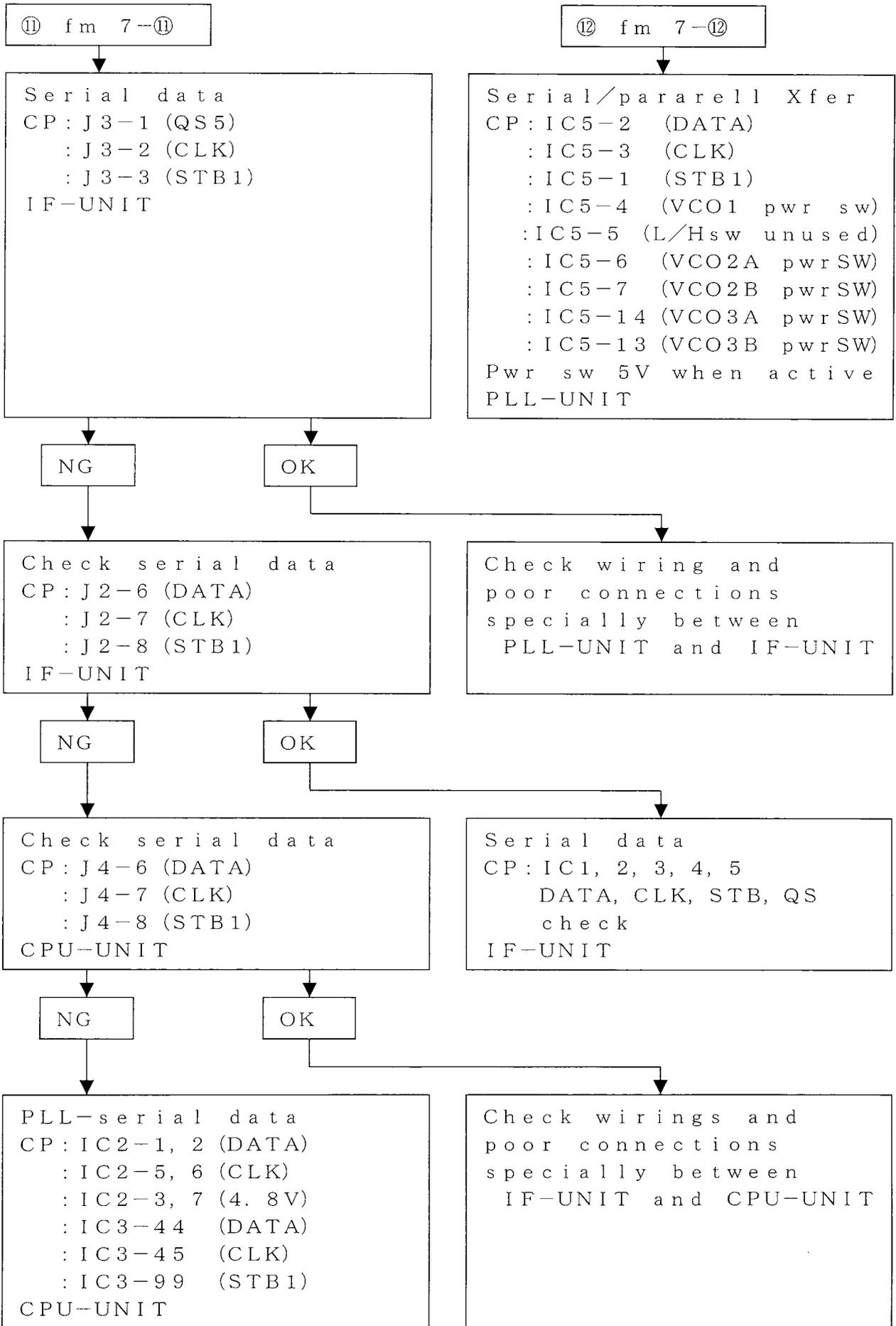


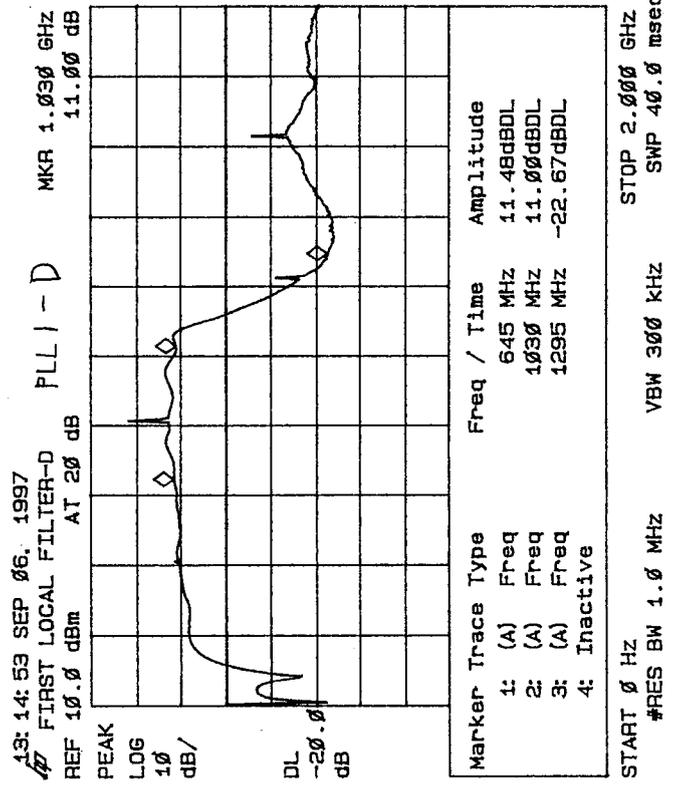
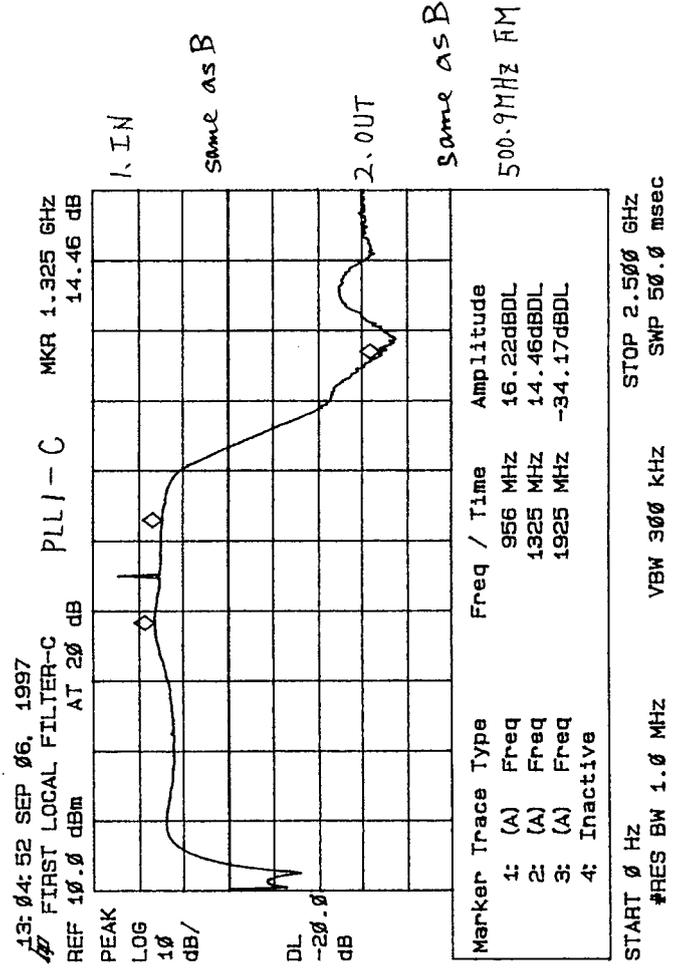
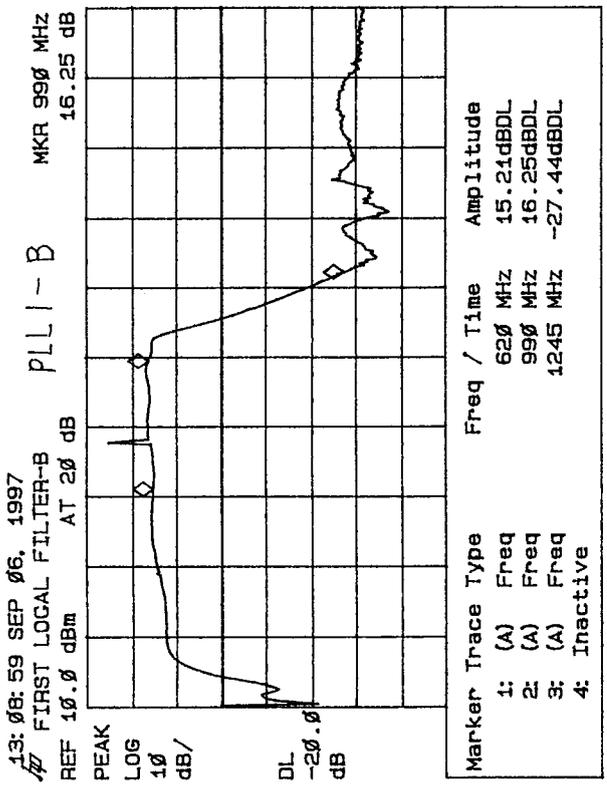
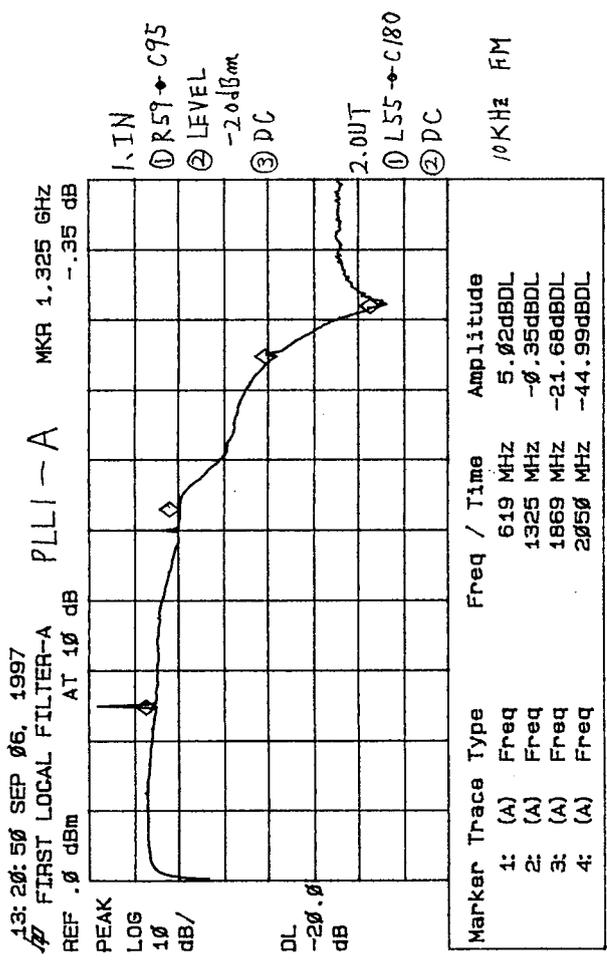
⑨ fm 7-⑨

Check wirings
poor connections
specially for between
PLL-UNIT and
CPU-UNIT

⑩ fm 7-⑩

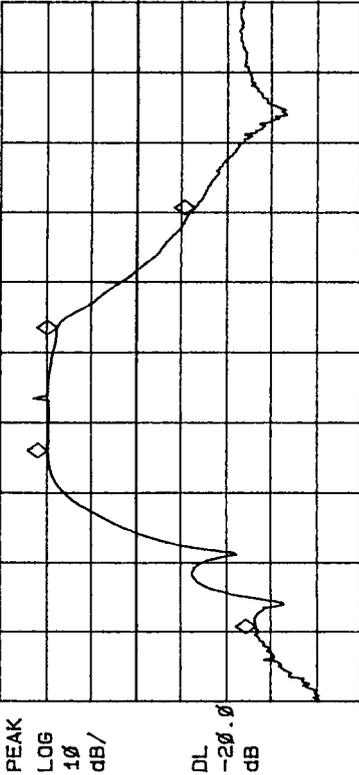
PLL-serial data
CP: IC2-1, 2 (DATA)
: IC2-5, 6 (CLK)
: IC2-3, 7 (4.8V)
: IC3-44 (DATA)
: IC3-45 (CLK)
: IC3-46 (STBA)
: IC3-47 (STBB)
CPU-UNIT





13:55:31 SEP 06, 1997

FIRST LOCAL FILTER-E PLL2-A MKR 1.617 GHz
REF 10.0 dBm AT 20 dB 17.36 dB



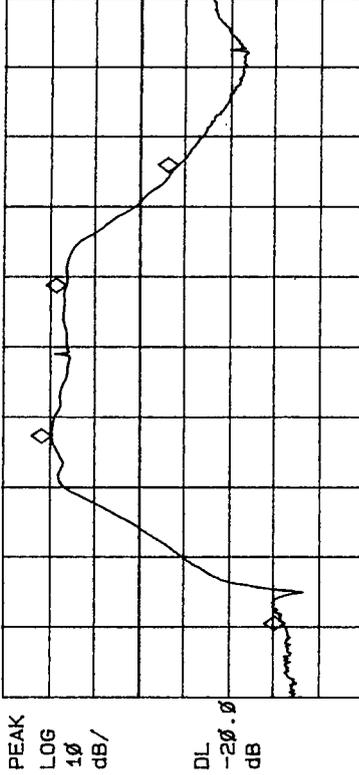
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-------------|
| 1: (A) | Freq | 804 MHz | -26.80dBdBL |
| 2: (A) | Freq | 1284 MHz | 19.49dBdBL |
| 3: (A) | Freq | 1617 MHz | 17.36dBdBL |
| 4: (A) | Freq | 1944 MHz | -13.02dBdBL |

START 600 MHz #RES BW 1.0 MHz VBW 300 kHz STOP 2.500 GHz
SNP 38.0 msec

1. IN
 ① C181 OPEN
 ② D17-A
 ③ LEVEL -20dBm
 ④ AC (100PF)
 2. OUT
 ① J1
 ② DC1
 800.9 MHz FM

14:04:17 SEP 06, 1997

FIRST LOCAL FILTER-F PLL2-B MKR 2.034 GHz
REF 10.0 dBm AT 20 dB 16.16 dB



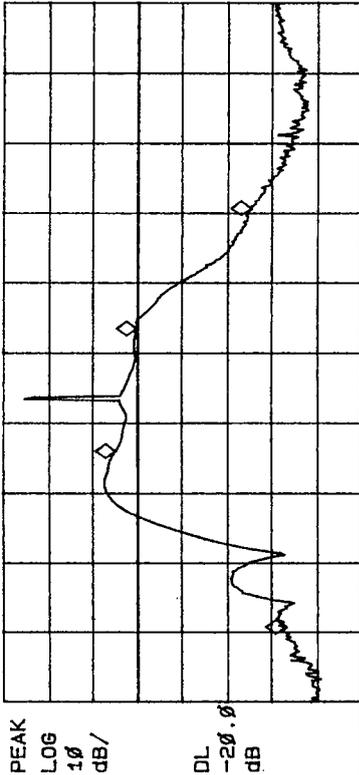
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-------------|
| 1: (A) | Freq | 1021 MHz | -32.60dBdBL |
| 2: (A) | Freq | 1582 MHz | 19.35dBdBL |
| 3: (A) | Freq | 2034 MHz | 16.16dBdBL |
| 4: (A) | Freq | 2396 MHz | -8.59dBdBL |

START 800 MHz #RES BW 1.0 MHz VBW 300 kHz STOP 2.900 GHz
SNP 42.0 msec

1. IN
 Same as A
 2. OUT
 Same as A
 1200.9 MHz FM

13:50:15 SEP 06, 1997

FIRST LOCAL FILTER-E PLL2-C MKR 1.617 GHz
REF 10.0 dBm AT 20 dB 17.14 dB



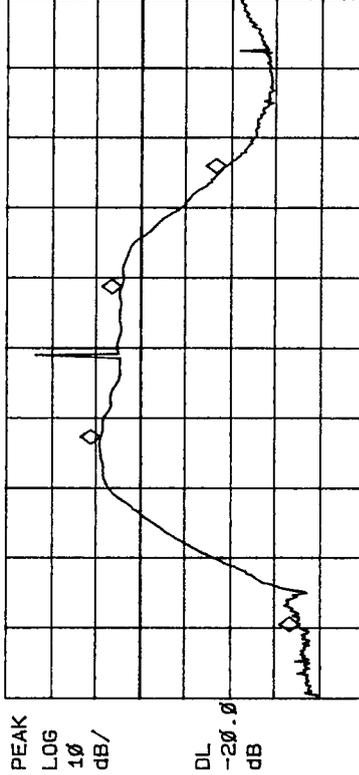
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-------------|
| 1: (A) | Freq | 804 MHz | -33.29dBdBL |
| 2: (A) | Freq | 1284 MHz | 4.85dBdBL |
| 3: (A) | Freq | 1617 MHz | 0.14dBdBL |
| 4: (A) | Freq | 1944 MHz | -25.44dBdBL |

START 600 MHz #RES BW 1.0 MHz VBW 300 kHz STOP 2.500 GHz
SNP 38.0 msec

1. IN
 ① HDB1-1
 ② LEVEL -20dBm
 ③ DC
 2. OUT
 ① J1
 ② DC1
 800.9 MHz FM

14:08:29 SEP 06, 1997

FIRST LOCAL FILTER-F PLL2-D MKR 2.034 GHz
REF 10.0 dBm AT 20 dB 4.16 dB



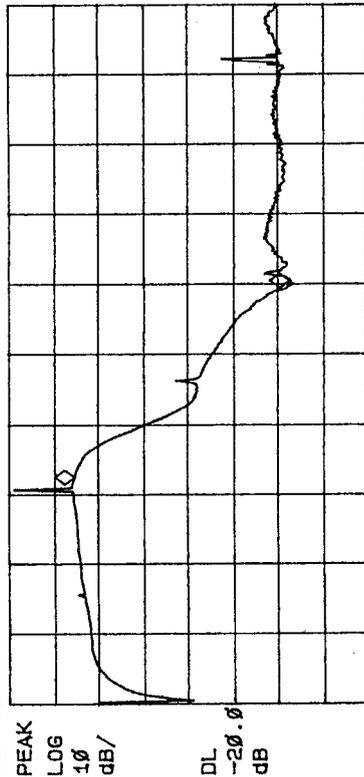
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-------------|
| 1: (A) | Freq | 1021 MHz | -35.72dBdBL |
| 2: (A) | Freq | 1582 MHz | 8.87dBdBL |
| 3: (A) | Freq | 2034 MHz | 4.16dBdBL |
| 4: (A) | Freq | 2396 MHz | -19.11dBdBL |

START 800 MHz #RES BW 1.0 MHz VBW 300 kHz STOP 2.900 GHz
SNP 42.0 msec

1. IN
 Same as C
 2. OUT
 Same as C
 1200.9 MHz FM

19:17:33 SEP 05, 1997

SECOND LOCAL FILTER-H PLL3-A MKR 650 MHz 5.25 dB



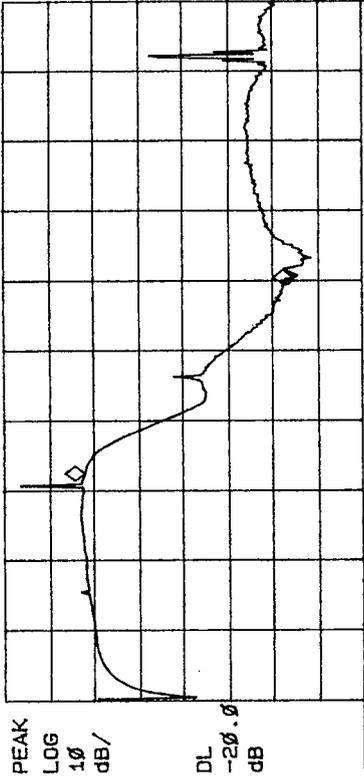
1. IN
 ① R53 → C76
 ② LEVEL -20dBm
 ③ DC
 2. OUT
 ① L20 → R51
 ② DC
 129.9 MHz FM

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 650 MHz | 5.25dBOL |
| 2: | (A) Freq | 1210 MHz | -42.85dBOL |
| 3: | Inactive | | |
| 4: | Inactive | | |

START 0 Hz #RES BW 1.0 MHz VBW 300 kHz STOP 2.000 GHz SWP 40.0 msec

19:19:02 SEP 05, 1997

SECOND LOCAL FILTER-H PLL3-B MKR 650 MHz 1.92 dB



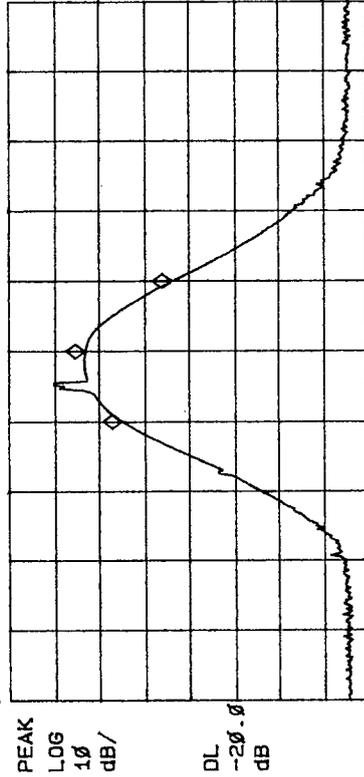
1. IN
 Same as A
 2. OUT
 ① DBM1-3
 ② DC
 129.9 MHz FM

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 650 MHz | 1.92dBOL |
| 2: | (A) Freq | 1210 MHz | -44.69dBOL |
| 3: | Inactive | | |
| 4: | Inactive | | |

START 0 Hz #RES BW 1.0 MHz VBW 300 kHz STOP 2.000 GHz SWP 40.0 msec

19:26:49 SEP 05, 1997

SECOND LOCAL FILTER-J PLL3-C MKR 620.45 MHz 2.94 dB



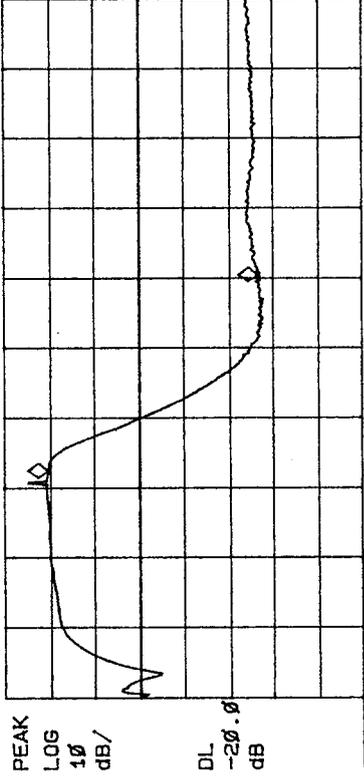
1. IN
 ① T1-1
 ② LEVEL -20dBm
 ③ DC
 2. OUT
 ① T2-5
 ② DC
 129.9 MHz FM

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 615.45 MHz | -5.22dBOL |
| 2: | (A) Freq | 620.45 MHz | 2.94dBOL |
| 3: | (A) Freq | 625.45 MHz | -16.31dBOL |
| 4: | Inactive | | |

CENTER 620.45 MHz #RES BW 100 kHz VBW 30 kHz SPAN 50.00 MHz SWP 50.0 msec

19:08:57 SEP 05, 1997

SECOND LOCAL FILTER-G PLL3-D MKR 650 MHz 20.25 dB



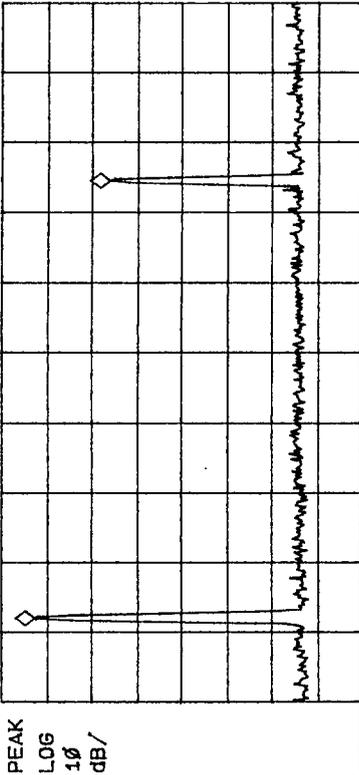
1. IN
 ① R133 → C11
 ② LEVEL -20dBm
 ③ DC
 2. OUT
 ① J2
 ② DC2
 129.9 MHz FM

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 650 MHz | 20.25dBOL |
| 2: | (A) Freq | 1210 MHz | -26.79dBOL |
| 3: | Inactive | | |
| 4: | Inactive | | |

START 0 Hz #RES BW 1.0 MHz VBW 300 kHz STOP 2.000 GHz SWP 40.0 msec

15:04:12 SEP 06, 1997

FIRST LOCAL FILTER-A PLL4 - A MKR 620 MHz
REF 10.0 dBm AT 20 dB



MEASUREMENT
① VC01-5
② AC

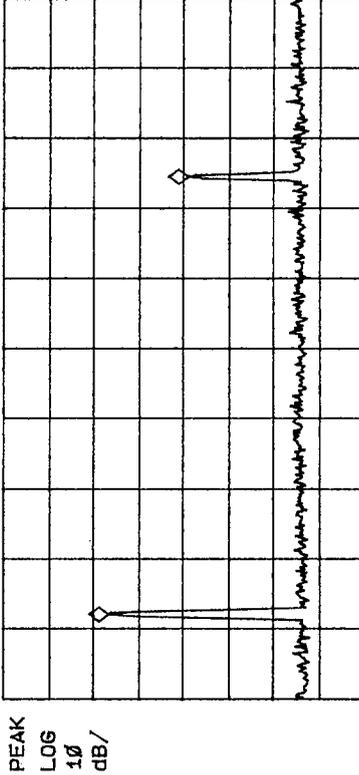
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 620 MHz | 2.40 dBm |
| 2: | (A) | 1245 MHz | -14.09 dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz
RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz
SWP 20.0 msec

10KHz FM

15:06:36 SEP 06, 1997

FIRST LOCAL FILTER-A PLL4 - B MKR 620 MHz
REF 10.0 dBm AT 20 dB



MEASUREMENT
① IC10-4
② AC

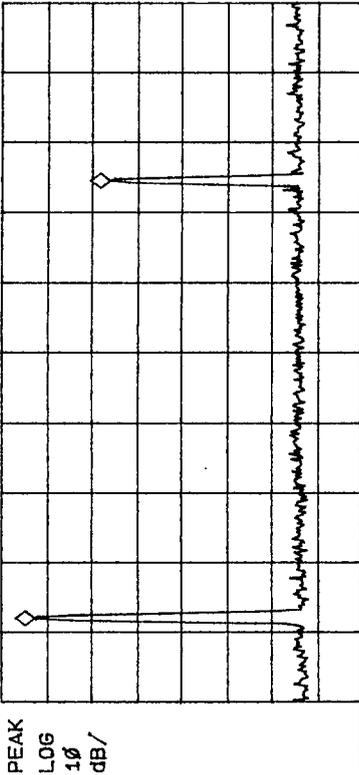
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 620 MHz | -13.53 dBm |
| 2: | (A) | 1245 MHz | -31.20 dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz
RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz
SWP 20.0 msec

10KHz FM

15:04:45 SEP 06, 1997

FIRST LOCAL FILTER-A PLL4 - C MKR 620 MHz
REF 10.0 dBm AT 20 dB



MEASUREMENT
① IC10-2
② AC

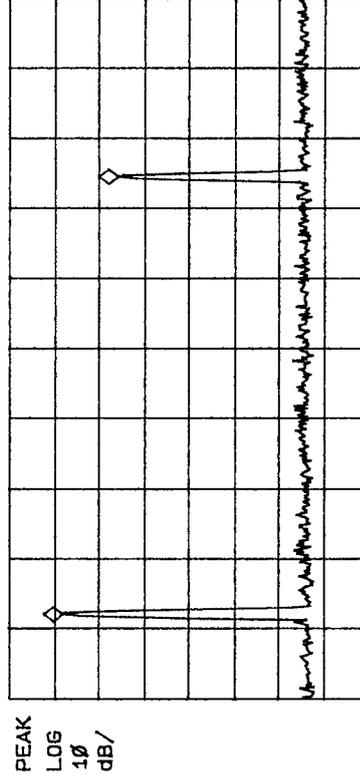
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 620 MHz | -8.53 dBm |
| 2: | (A) | 1245 MHz | -21.45 dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz
RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz
SWP 20.0 msec

10KHz FM

15:02:33 SEP 06, 1997

FIRST LOCAL FILTER-A PLL4 - D MKR 620 MHz
REF 10.0 dBm AT 20 dB



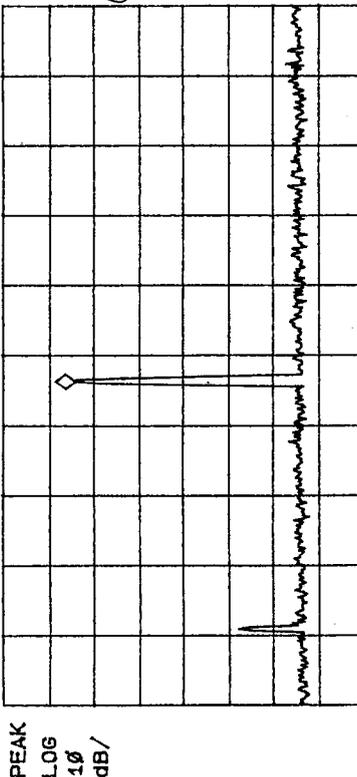
MEASUREMENT
① IC1-8
② AC

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 620 MHz | -2.11 dBm |
| 2: | (A) | 1245 MHz | -14.45 dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz
RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz
SWP 20.0 msec

10KHz FM

15: 14: 16 SEP 06, 1997
FIRST LOCAL FILTER-A PLL5 - A
REF 10.0 dBm AT 20 dB MKR 962 MHz
-6.04 dBm



MEASUREMENT

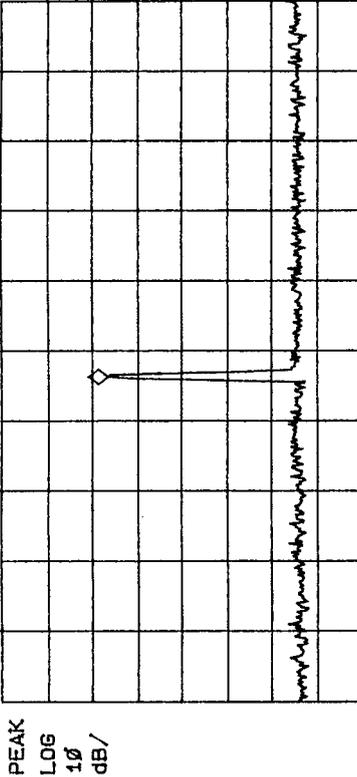
- ① VC03-5
- ② AC

340.900 MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|-----------|
| 1: | (A) Freq | 963 MHz | | -6.04 dBm |
| 2: | Inactive | | | |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 1.000 GHz
RES BW 3.0 MHz
SPAN 1.000 GHz
SMP 20.0 msec
VBW 1 MHz

15: 17: 28 SEP 06, 1997
FIRST LOCAL FILTER-A PLL5 - B
REF 10.0 dBm AT 20 dB MKR 962 MHz
-13.66 dBm



MEASUREMENT

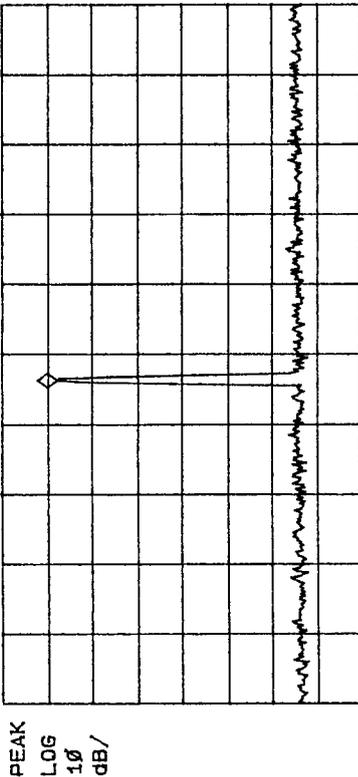
- ① IC10-4
- ② AC

340.900 MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|------------|
| 1: | (A) Freq | 963 MHz | | -13.66 dBm |
| 2: | Inactive | | | |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 1.000 GHz
RES BW 3.0 MHz
SPAN 1.000 GHz
SMP 20.0 msec
VBW 1 MHz

15: 19: 19 SEP 06, 1997
FIRST LOCAL FILTER-A PLL5 - C
REF 10.0 dBm AT 20 dB MKR 962 MHz
-2.37 dBm



MEASUREMENT

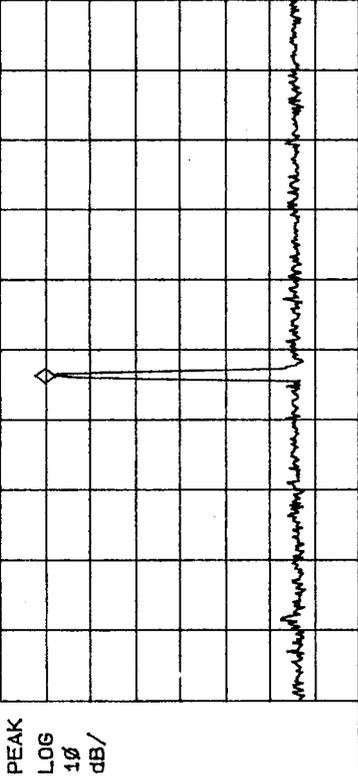
- ① IC10-2
- ② AC

340.900 MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|-----------|
| 1: | (A) Freq | 963 MHz | | -2.37 dBm |
| 2: | Inactive | | | |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 1.000 GHz
RES BW 3.0 MHz
SPAN 1.000 GHz
SMP 20.0 msec
VBW 1 MHz

15: 21: 24 SEP 06, 1997
FIRST LOCAL FILTER-A PLL5 - D
REF 10.0 dBm AT 20 dB MKR 962 MHz
-2.34 dBm



MEASUREMENT

- ① IC1-8
- ② AC

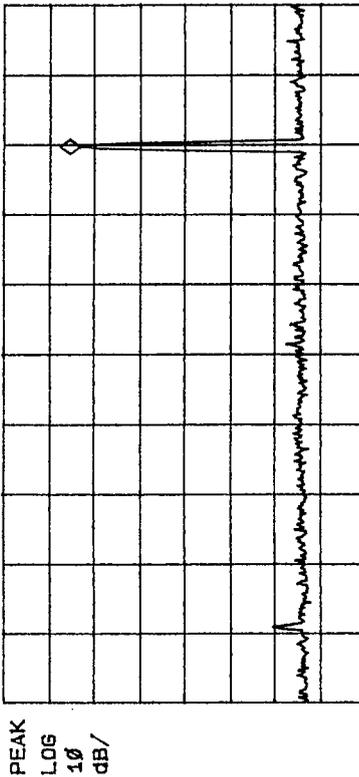
340.900 MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|-----------|
| 1: | (A) Freq | 963 MHz | | -2.34 dBm |
| 2: | Inactive | | | |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 1.000 GHz
RES BW 3.0 MHz
SPAN 1.000 GHz
SMP 20.0 msec
VBW 1 MHz

15: 25: 52 SEP 06, 1997

FIRST LOCAL FILTER-A PLL6 - A MKR 1.298 GHz
REF 10.0 dBm AT 20 dB -6.88 dBm



MEASUREMENT

- ① VC03 - 6
- ② AC

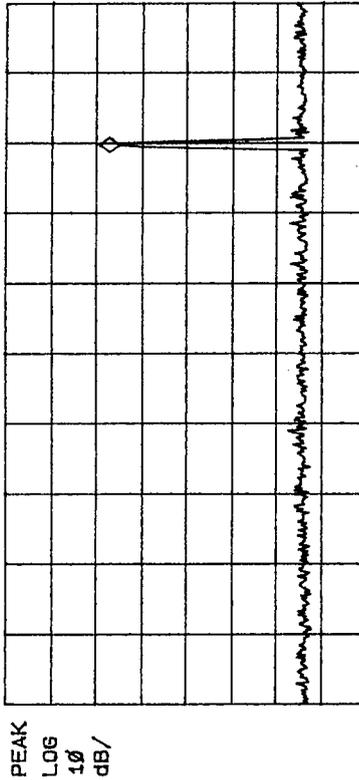
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 1298 MHz | -6.88 dBm |
| 2: | Inactive | | |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz SWP 20.0 msec

674.700 MHz FM

15: 27: 30 SEP 06, 1997

FIRST LOCAL FILTER-A PLL6 - B MKR 1.298 GHz
REF 10.0 dBm AT 20 dB -15.23 dBm



MEASUREMENT

- ① IC10 - 4
- ② AC

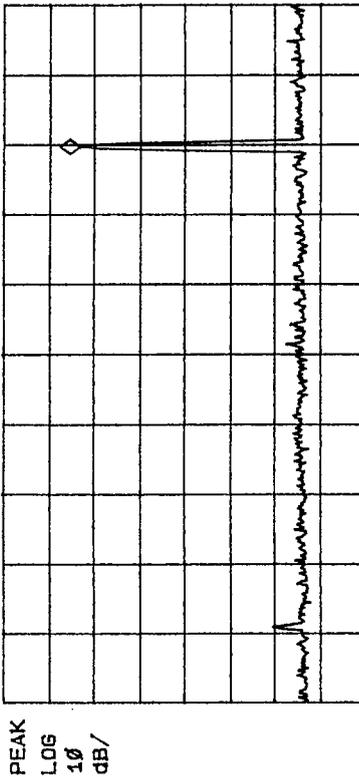
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 1298 MHz | -15.23 dBm |
| 2: | Inactive | | |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz SWP 20.0 msec

674.700 MHz FM

15: 29: 29 SEP 06, 1997

FIRST LOCAL FILTER-A PLL6 - C MKR 1.298 GHz
REF 10.0 dBm AT 20 dB -11.95 dBm



MEASUREMENT

- ① IC10 - 2
- ② AC

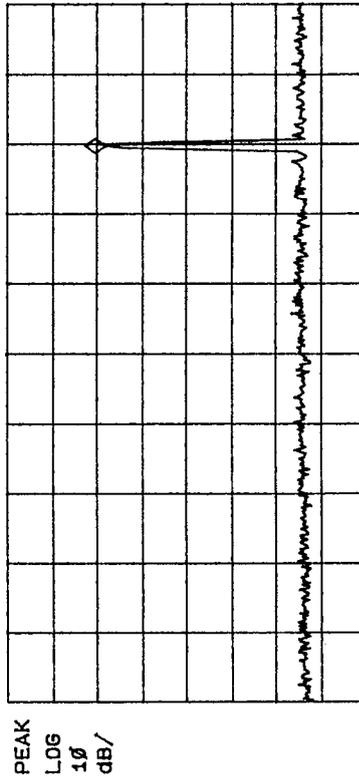
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 1298 MHz | -11.95 dBm |
| 2: | Inactive | | |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz SWP 20.0 msec

674.700 MHz FM

15: 31: 13 SEP 06, 1997

FIRST LOCAL FILTER-A PLL6 - D MKR 1.298 GHz
REF 10.0 dBm AT 20 dB -5.73 dBm



MEASUREMENT

- ① IC1 - 8
- ② AC

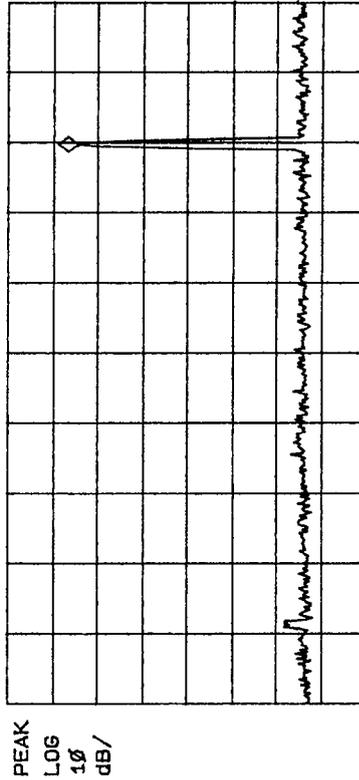
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 1298 MHz | -5.73 dBm |
| 2: | Inactive | | |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz SWP 20.0 msec

674.700 MHz FM

15: 31: 13 SEP 06, 1997

FIRST LOCAL FILTER-A PLL6 - D MKR 1.298 GHz
REF 10.0 dBm AT 20 dB -5.73 dBm



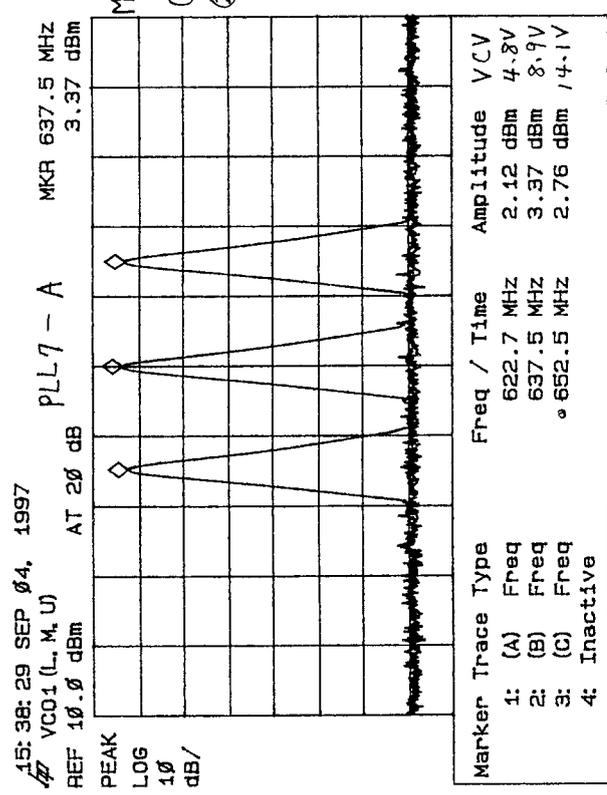
MEASUREMENT

- ① IC1 - 8
- ② AC

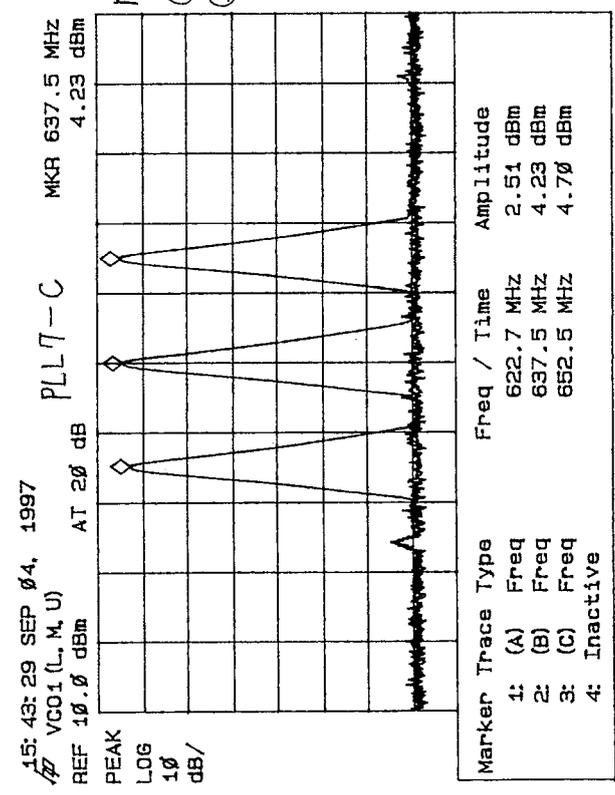
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 1298 MHz | -5.73 dBm |
| 2: | Inactive | | |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz RES BW 3.0 MHz VBW 1 MHz SPAN 1.000 GHz SWP 20.0 msec

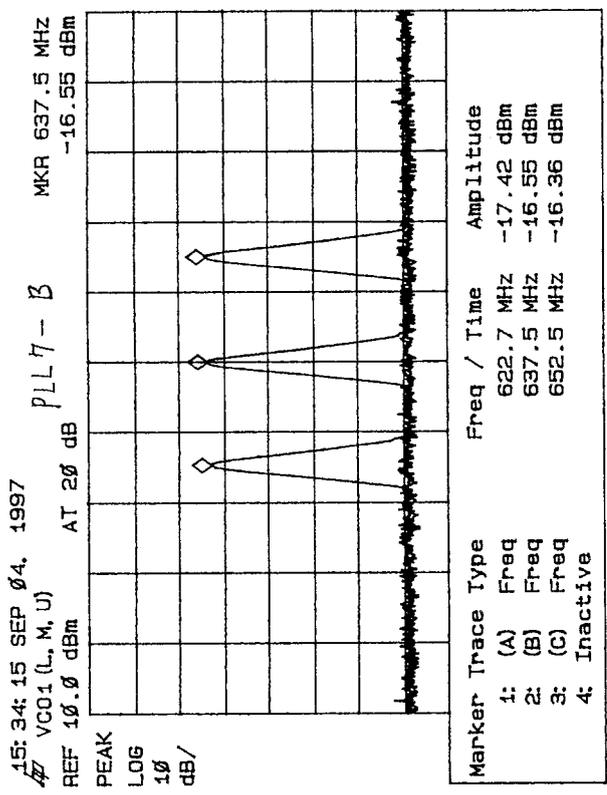
674.700 MHz FM



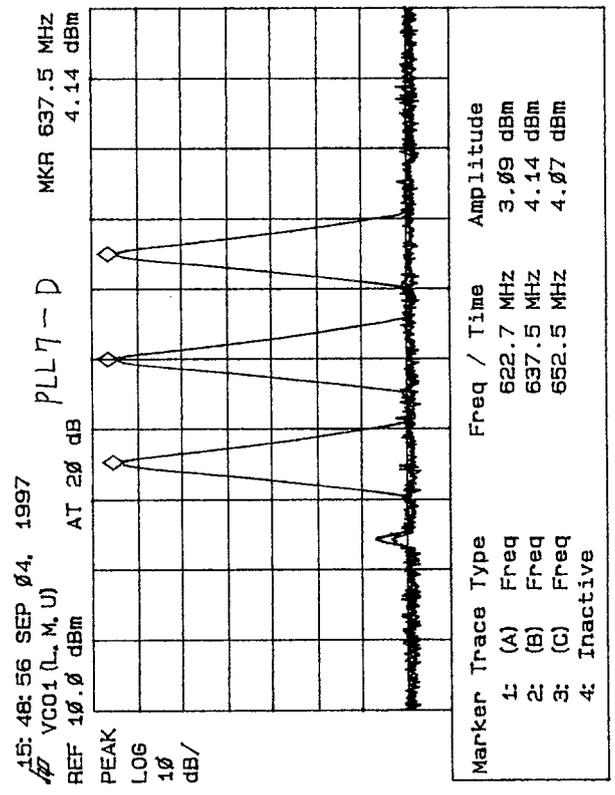
CENTER 637.5 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 100.0 MHz
 SWP 20.0 msec



CENTER 637.5 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 100.0 MHz
 SWP 20.0 msec



CENTER 637.5 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 100.0 MHz
 SWP 20.0 msec



CENTER 637.5 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 100.0 MHz
 SWP 20.0 msec

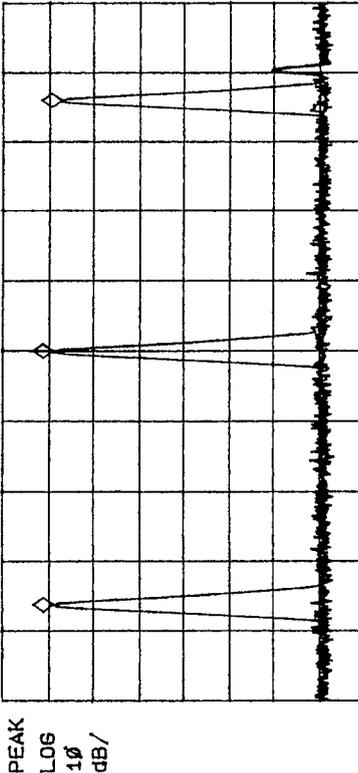
FILTER-B

19: 29: 07 SEP 04, 1997
VC02-1 (L, M, U)

PLL8 - A

MKR 726.0 MHz
-1.14 dBm

REF 10.0 dBm AT 20 dB



| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 653.5 MHz | -1.28 dBm |
| 2: (B) Freq | 726.0 MHz | -1.14 dBm |
| 3: (C) Freq | 798.0 MHz | -3.01 dBm |
| 4: Inactive | | |

CENTER 726.0 MHz
RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec

MEASUREMENT

① VC02-5
② AC

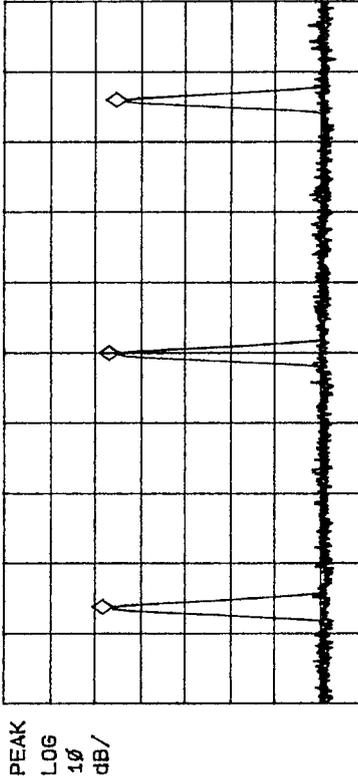
30.9 MHz FM
102.9 MHz
174.9 MHz

19: 41: 54 SEP 04, 1997
VC02-1 (L, M, U)

PLL8 - B

MKR 726.0 MHz
-15.41 dBm

REF 10.0 dBm AT 20 dB



| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|------------|
| 1: (A) Freq | 653.5 MHz | -13.98 dBm |
| 2: (B) Freq | 726.0 MHz | -15.41 dBm |
| 3: (C) Freq | 798.0 MHz | -16.93 dBm |
| 4: Inactive | | |

CENTER 726.0 MHz
RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec

MEASUREMENT

① IC9-1
② AC

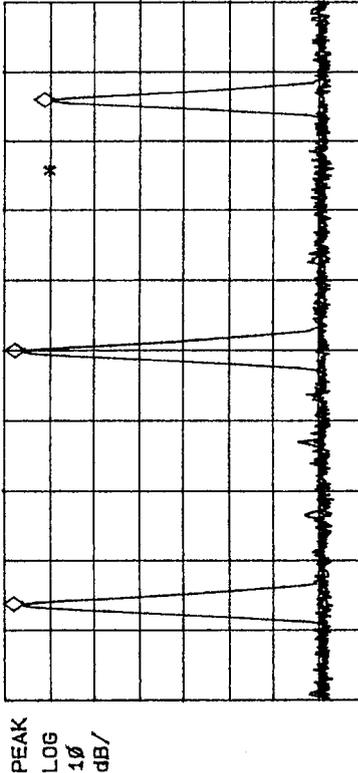
FILTER - B

19: 46: 22 SEP 04, 1997
VC02-1 (L, M, U)

PLL8 - C

MKR 726.0 MHz
5.30 dBm

REF 10.0 dBm AT 20 dB



| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 653.5 MHz | 5.64 dBm |
| 2: (B) Freq | 726.0 MHz | 5.30 dBm |
| 3: (C) Freq | 798.0 MHz | -1.19 dBm |
| 4: Inactive | | |

CENTER 726.0 MHz
RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec

MEASUREMENT

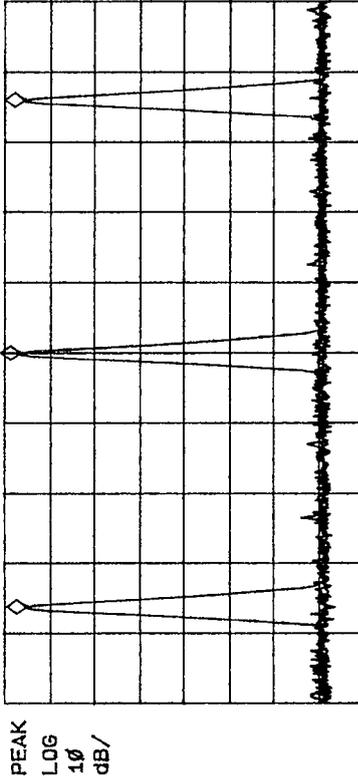
① IC9-4
② AC

19: 49: 21 SEP 04, 1997
VC02-1 (L, M, U)

PLL8 - D

MKR 726.0 MHz
6.35 dBm

REF 10.0 dBm AT 20 dB



| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 653.5 MHz | 4.95 dBm |
| 2: (B) Freq | 726.0 MHz | 6.35 dBm |
| 3: (C) Freq | 798.0 MHz | 5.44 dBm |
| 4: Inactive | | |

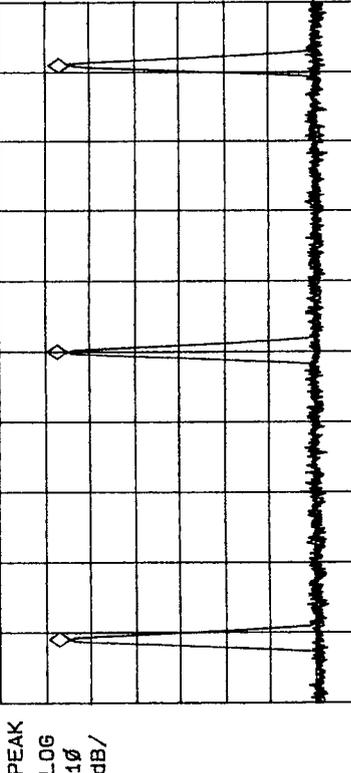
CENTER 726.0 MHz
RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec

MEASUREMENT

① J1
② AC

20: 04: 29 SEP 04, 1997
VC02-2 (L, M, U)

PLL 9 - A
REF 10.0 dBm AT 20 dB
MKR 901.5 MHz
-5.11 dBm



| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------------|
| 1: (A) Freq | 799.0 MHz | -5.34 dBm 3.0V |
| 2: (B) Freq | 901.5 MHz | -5.11 dBm 11.3V |
| 3: (C) Freq | 1004.0 MHz | -5.55 dBm 23.0V |
| 4: Inactive | | |

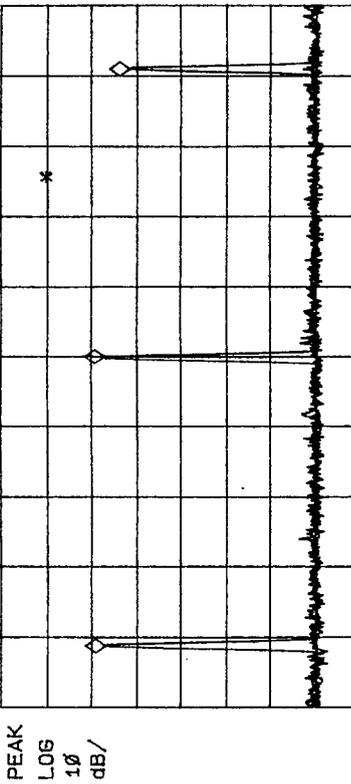
CENTER 901.5 MHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 250.0 MHz
SWP 20.0 msec

MEASUREMENT
① VC02-6
② AC

975.9 MHz FM
1179.9 MHz S
1384.9 MHz S

11: 20: 12 SEP 05, 1997
VC02-2 (L, M, U)

PLL 9 - B
REF 10.0 dBm AT 20 dB
MKR 1.8036 GHz
-13.08 dBm



| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|------------|
| 1: (A) Freq | 1597.4 MHz | -13.17 dBm |
| 2: (B) Freq | 1803.6 MHz | -13.08 dBm |
| 3: (C) Freq | 2008.6 MHz | -18.62 dBm |
| 4: Inactive | | |

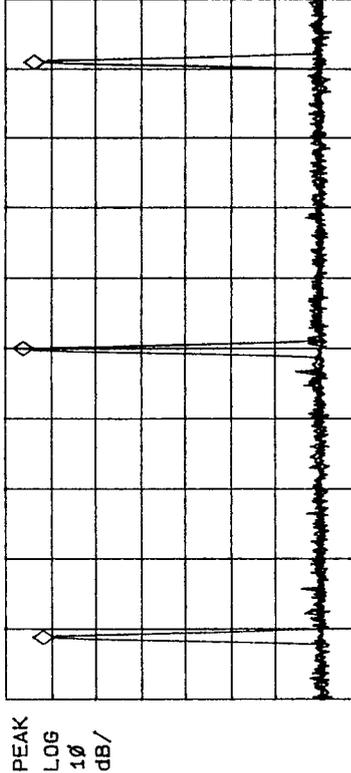
CENTER 1.8036 GHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 500.0 MHz
SWP 20.0 msec

MEASUREMENT
① IC11-1
② AC

FILTER - A

11: 26: 36 SEP 05, 1997
VC02-2 (L, M, U)

PLL 9 - C
REF 10.0 dBm AT 20 dB
MKR 1.8036 GHz
3.72 dBm



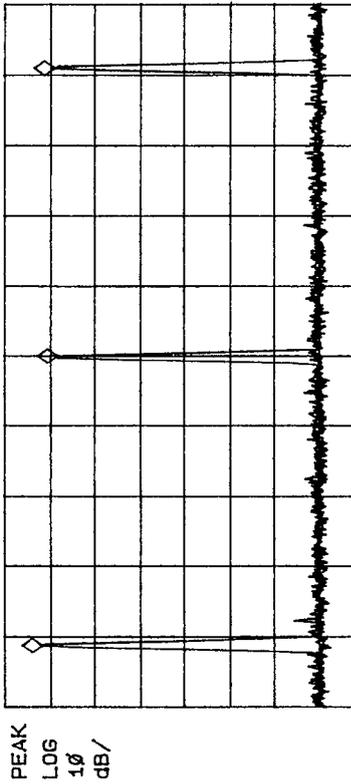
| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 1597.4 MHz | -0.61 dBm |
| 2: (B) Freq | 1803.6 MHz | 3.72 dBm |
| 3: (C) Freq | 2008.6 MHz | 1.33 dBm |
| 4: Inactive | | |

CENTER 1.8036 GHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 500.0 MHz
SWP 20.0 msec

MEASUREMENT
① IC11-4
② AC

11: 40: 39 SEP 05, 1997
VC02-2 (L, M, U)

PLL 9 - D
REF 10.0 dBm AT 20 dB
MKR 1.8036 GHz
-1.81 dBm



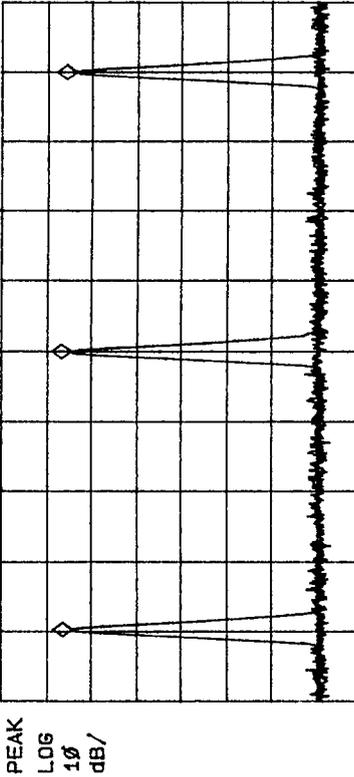
| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 1597.4 MHz | 1.56 dBm |
| 2: (B) Freq | 1803.6 MHz | -1.81 dBm |
| 3: (C) Freq | 2008.6 MHz | -1.15 dBm |
| 4: Inactive | | |

CENTER 1.8036 GHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 500.0 MHz
SWP 20.0 msec

MEASUREMENT
① J1
② AC

12: 03: 39 SEP 05, 1997
 VC03-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

PLL10 - A MKR 1.0428 GHz
 -5.73 dBm



MEASUREMENT
 ① VC03-5
 ② AC

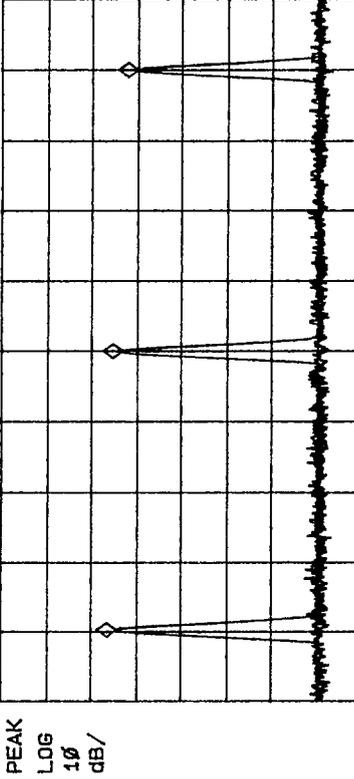
| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------------|
| 1: (A) Freq | 963.3 MHz | -6.06 dBm 5.4V |
| 2: (B) Freq | 1042.8 MHz | -5.73 dBm 10.6V |
| 3: (C) Freq | 1122.8 MHz | -6.72 dBm 15.2V |
| 4: Inactive | | |

CENTER 1.0428 GHz SPAN 200.0 MHz
 #RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

340.9 MHz FM
 419.9 MHz "
 499.9 MHz "

12: 10: 52 SEP 05, 1997
 VC03-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

PLL10 - B MKR 1.0428 GHz
 -17.04 dBm



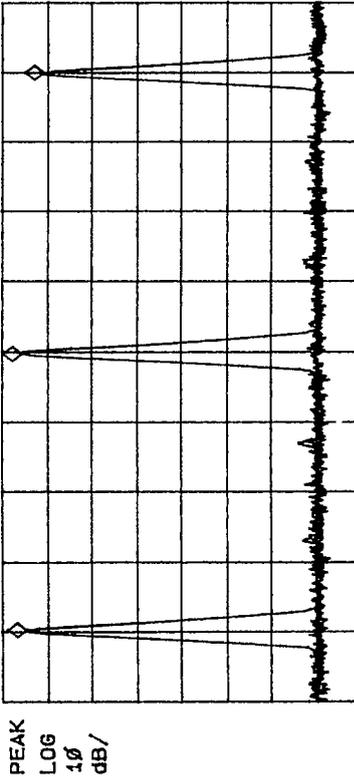
MEASUREMENT
 ① IC12-1
 ② AC

| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|------------|
| 1: (A) Freq | 963.3 MHz | -15.81 dBm |
| 2: (B) Freq | 1042.8 MHz | -17.04 dBm |
| 3: (C) Freq | 1122.8 MHz | -20.26 dBm |
| 4: Inactive | | |

CENTER 1.0428 GHz SPAN 200.0 MHz
 #RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

13: 23: 01 SEP 05, 1997
 VC03-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

PLL10 - C MKR 1.0423 GHz
 5.42 dBm



MEASUREMENT
 ① IC12-4
 ② AC

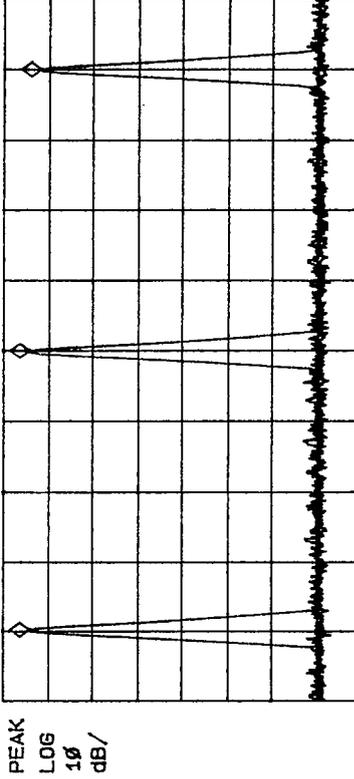
| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 963.3 MHz | 4.35 dBm |
| 2: (B) Freq | 1042.3 MHz | 5.42 dBm |
| 3: (C) Freq | 1122.8 MHz | 0.52 dBm |
| 4: Inactive | | |

CENTER 1.0428 GHz SPAN 200.0 MHz
 #RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

FILTER-C

13: 27: 02 SEP 05, 1997
 VC03-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

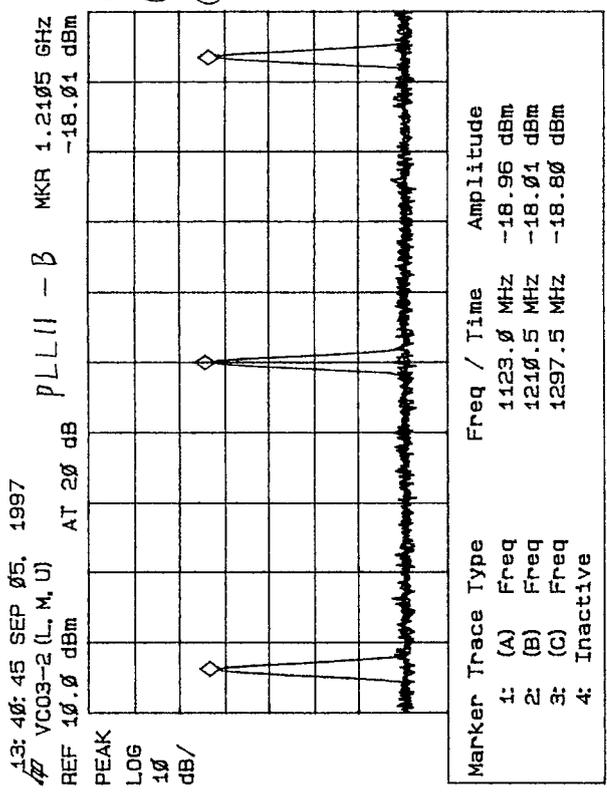
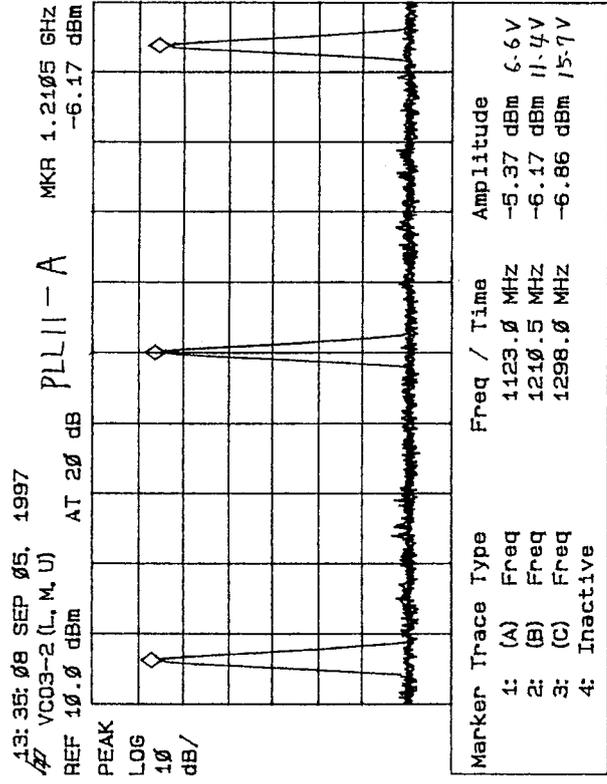
PLL10 - D MKR 1.0428 GHz
 4.02 dBm



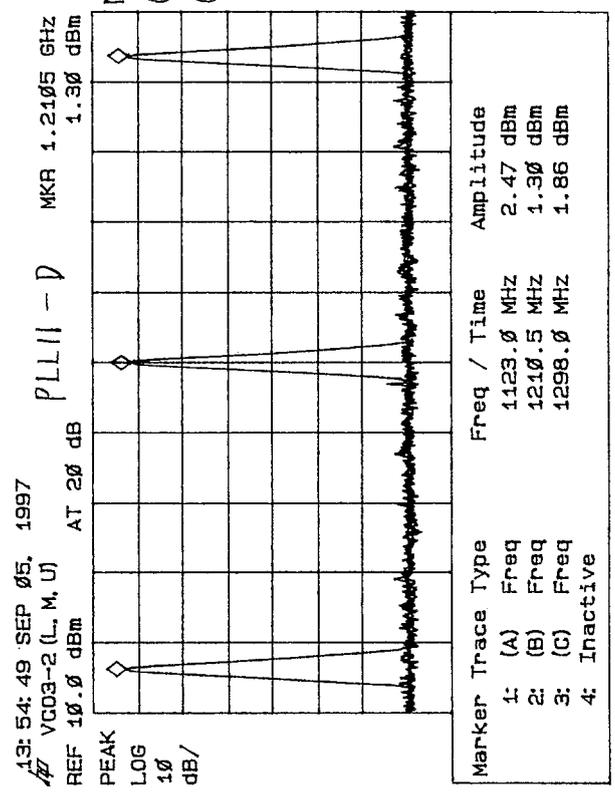
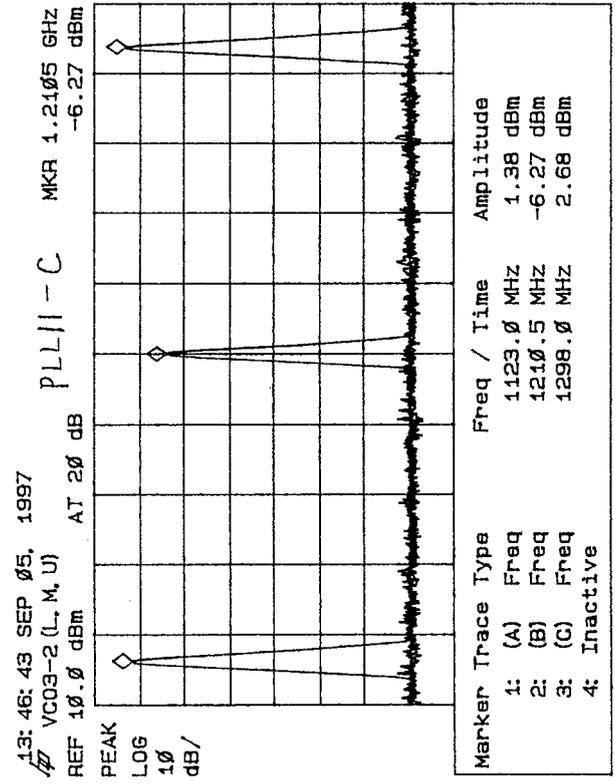
MEASUREMENT
 ① J1
 ② AC

| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 963.3 MHz | 3.89 dBm |
| 2: (B) Freq | 1042.8 MHz | 4.02 dBm |
| 3: (C) Freq | 1122.8 MHz | 1.54 dBm |
| 4: Inactive | | |

CENTER 1.0428 GHz SPAN 200.0 MHz
 #RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

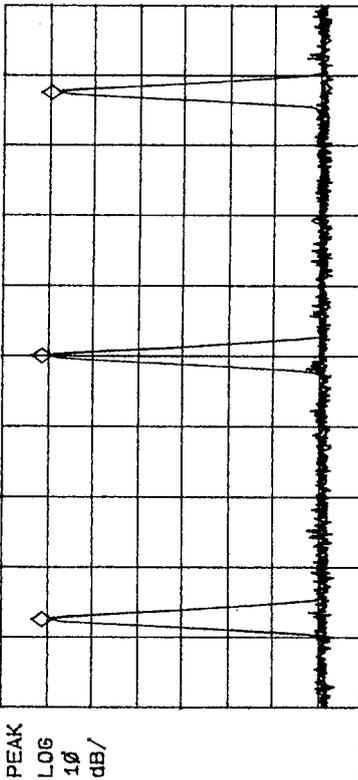


FILTER - C



14: 38: 23 SEP 05, 1997
 VC02-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

PLL12-A
 MKR 724.0 MHz
 -1.04 dBm



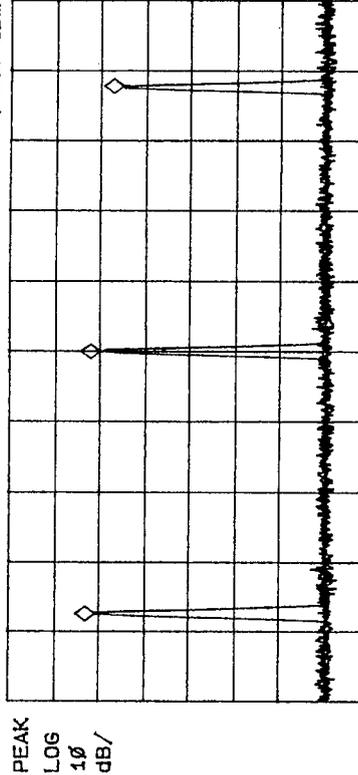
MEASUREMENT
 ① VC02-5
 ② AC

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 649.0 MHz | -1.31 dBm |
| 2: | (B) Freq | 724.0 MHz | -1.04 dBm |
| 3: | (C) Freq | 799.0 MHz | -2.82 dBm |
| 4: | Inactive | | |

CENTER 724.0 MHz
 #RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 200.0 MHz
 SWP 20.0 msec

14: 29: 06 SEP 05, 1997
 VC02-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

PLL12-B
 MKR 1.4480 GHz
 -10.26 dBm



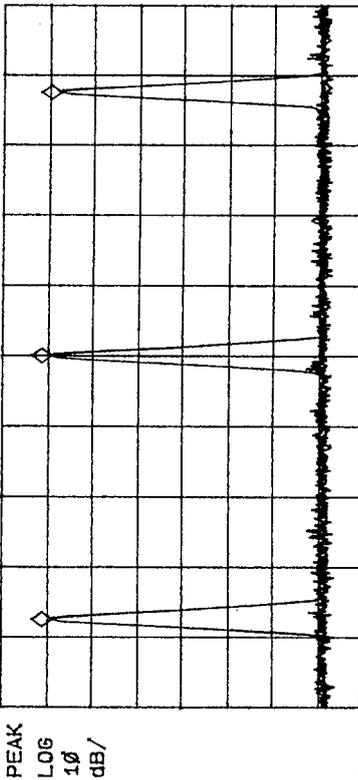
MEASUREMENT
 ① IC13-1
 ② AC

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 1298.0 MHz | -9.28 dBm |
| 2: | (B) Freq | 1448.0 MHz | -10.26 dBm |
| 3: | (C) Freq | 1599.0 MHz | -15.16 dBm |
| 4: | Inactive | | |

CENTER 1.4480 GHz
 #RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 400.0 MHz
 SWP 20.0 msec

14: 32: 43 SEP 05, 1997
 VC02-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

PLL12-C
 MKR 1.4480 GHz
 -3.43 dBm



MEASUREMENT
 ① IC13-4
 ② AC

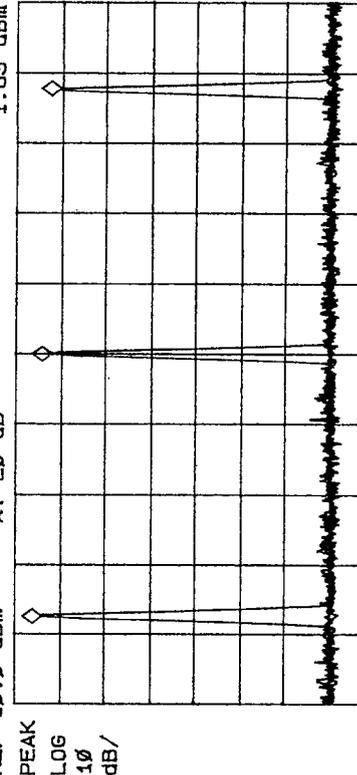
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 1298.0 MHz | 3.02 dBm |
| 2: | (B) Freq | 1448.0 MHz | -3.43 dBm |
| 3: | (C) Freq | 1599.0 MHz | 2.65 dBm |
| 4: | Inactive | | |

CENTER 1.4480 GHz
 #RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 400.0 MHz
 SWP 20.0 msec

FILTER-E

14: 35: 37 SEP 05, 1997
 VC02-1 (L, M, U)
 REF 10.0 dBm AT 20 dB

PLL12-D
 MKR 1.4480 GHz
 1.83 dBm



MEASUREMENT
 ① J1
 ② AC

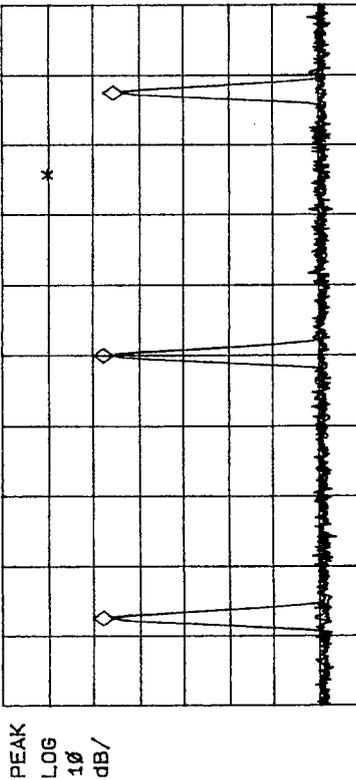
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 1298.0 MHz | 3.79 dBm |
| 2: | (B) Freq | 1448.0 MHz | 1.83 dBm |
| 3: | (C) Freq | 1599.0 MHz | -0.03 dBm |
| 4: | Inactive | | |

CENTER 1.4480 GHz
 #RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 400.0 MHz
 SWP 20.0 msec

14: 46: 21 SEP 05, 1997
VC02-1 (L, M, U)
REF 10.0 dBm

PLL13 - A

AT 20 dB MKR 724.0 MHz
-14.63 dBm



MEASUREMENT
① IC14 - 1
② AC

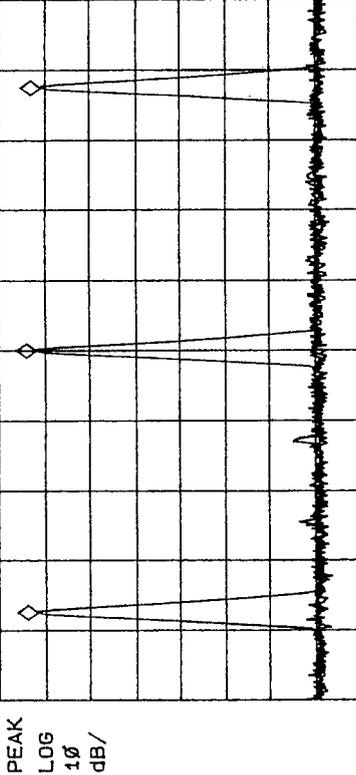
| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|------------|
| 1: (A) Freq | 649.0 MHz | -14.42 dBm |
| 2: (B) Freq | 724.0 MHz | -14.63 dBm |
| 3: (C) Freq | 799.0 MHz | -16.77 dBm |
| 4: Inactive | | |

CENTER 724.0 MHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec

14: 49: 58 SEP 05, 1997
VC02-1 (L, M, U)
REF 10.0 dBm

PLL13 - B

AT 20 dB MKR 724.0 MHz
1.62 dBm



MEASUREMENT
① IC14 - 4
② AC

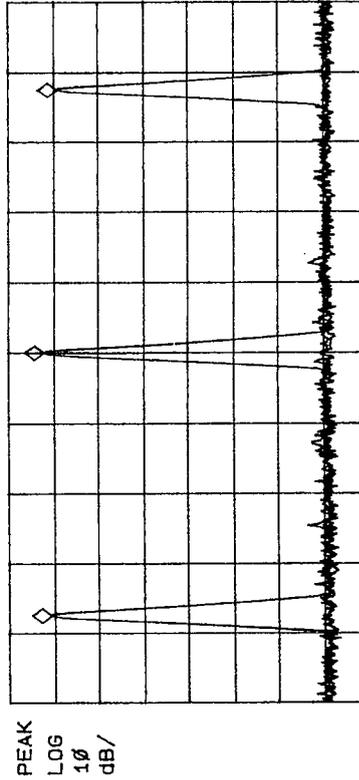
| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 649.0 MHz | 1.41 dBm |
| 2: (B) Freq | 724.0 MHz | 1.62 dBm |
| 3: (C) Freq | 799.0 MHz | 0.63 dBm |
| 4: Inactive | | |

CENTER 724.0 MHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec

14: 53: 08 SEP 05, 1997
VC02-1 (L, M, U)
REF 10.0 dBm

PLL13 - C

AT 20 dB MKR 724.0 MHz
1.87 dBm



MEASUREMENT
① FDB1 - 3
② AC

| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|-----------|
| 1: (A) Freq | 649.0 MHz | 0.35 dBm |
| 2: (B) Freq | 724.0 MHz | 1.87 dBm |
| 3: (C) Freq | 799.0 MHz | -1.15 dBm |
| 4: Inactive | | |

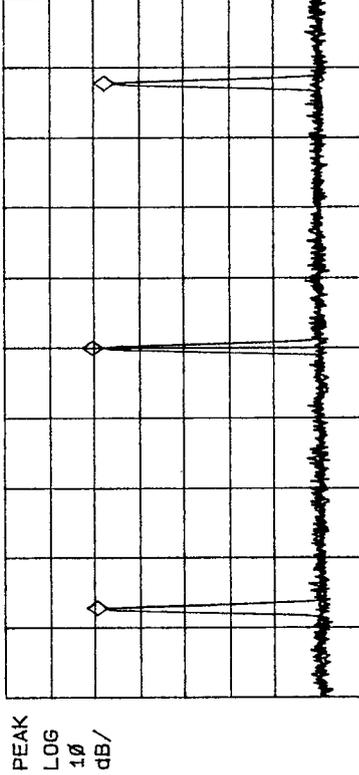
CENTER 724.0 MHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec

FILTER - D

14: 57: 14 SEP 05, 1997
VC02-1 (L, M, U)
REF 10.0 dBm

PLL13 - D

AT 20 dB MKR 1.4480 GHz
-12.00 dBm



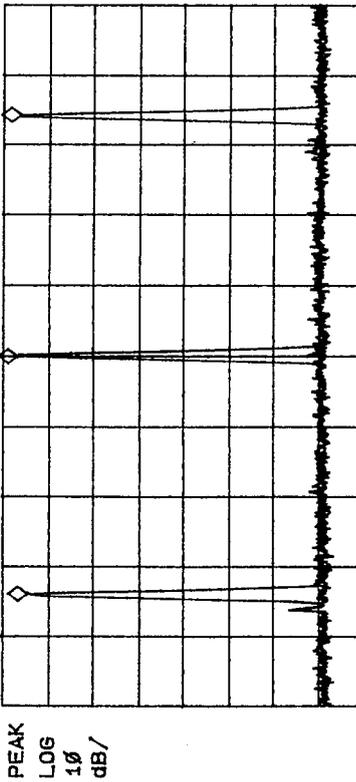
MEASUREMENT
① FDB1 - 1
② AC

| Marker Trace Type | Freq / Time | Amplitude |
|-------------------|-------------|------------|
| 1: (A) Freq | 1299.0 MHz | -12.88 dBm |
| 2: (B) Freq | 1448.0 MHz | -12.00 dBm |
| 3: (C) Freq | 1599.0 MHz | -14.72 dBm |
| 4: Inactive | | |

CENTER 1.4480 GHz
#RES BW 1.0 MHz
VBW 300 kHz
SPAN 400.0 MHz
SWP 20.0 msec

18: 23: 29 SEP 06, 1997

FIRST LOCAL OUT FILTER-B PLL14 - A MKR 792.3 MHz
REF 10.0 dBm AT 20 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 622.3 MHz | 4.28 dBm |
| 2: | (B) Freq | 792.3 MHz | 6.60 dBm |
| 3: | (C) Freq | 963.6 MHz | 5.94 dBm |
| 4: | Inactive | | |

CENTER 792.3 MHz
#RES BW 1.0 MHz VBW 300 kHz SPAN 500.0 MHz
SWP 20.0 msec

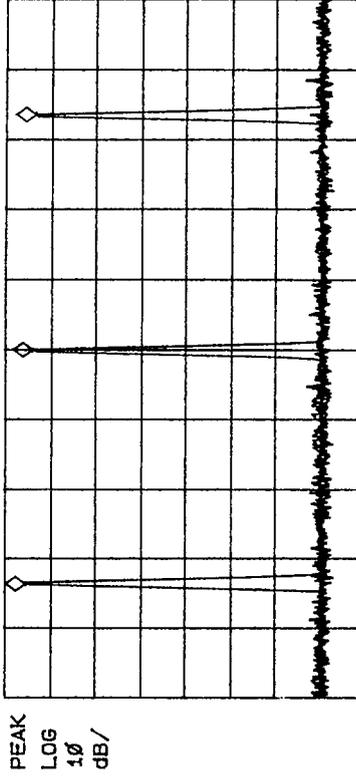
MEASUREMENT

- ① J1
- ② DCI

10.0 kHz FM
169.9 MHz
339.9 MHz

18: 31: 01 SEP 06, 1997

FIRST LOCAL OUT FILTER-C PLL14 - B MKR 1.1313 GHz
REF 10.0 dBm AT 20 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 962.5 MHz | 5.36 dBm |
| 2: | (B) Freq | 1131.3 MHz | 3.82 dBm |
| 3: | (C) Freq | 1298.8 MHz | 3.26 dBm |
| 4: | Inactive | | |

CENTER 1.1313 GHz
#RES BW 1.0 MHz VBW 300 kHz SPAN 500.0 MHz
SWP 20.0 msec

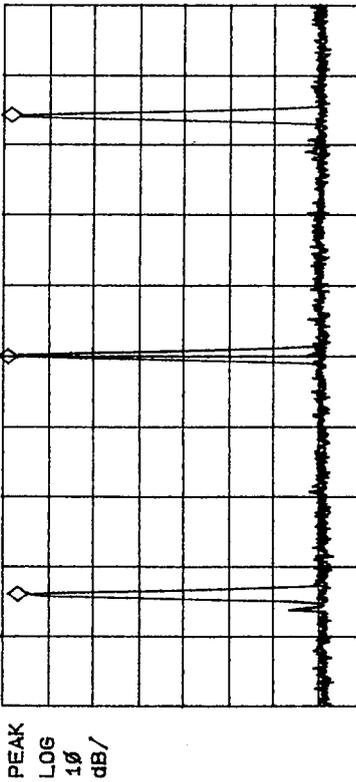
MEASUREMENT

- ① J1
- ② DCI

340.9 MHz FM
509.9 MHz
674.9 MHz

18: 34: 51 SEP 06, 1997

FIRST LOCAL OUT FILTER-E PLL14 - C MKR 1.4472 GHz
REF 10.0 dBm AT 20 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 1297.2 MHz | 5.95 dBm |
| 2: | (B) Freq | 1447.2 MHz | 4.39 dBm |
| 3: | (C) Freq | 1597.2 MHz | 3.00 dBm |
| 4: | Inactive | | |

CENTER 1.4472 GHz
#RES BW 1.0 MHz VBW 300 kHz SPAN 500.0 MHz
SWP 20.0 msec

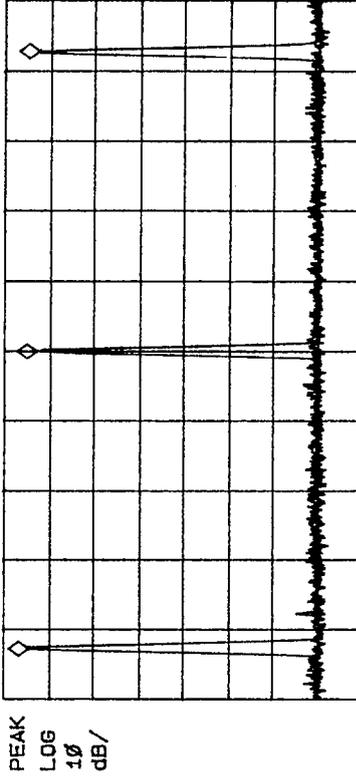
MEASUREMENT

- ① J1
- ② DCI

675.9 MHz FM
824.9 MHz
974.9 MHz

18: 39: 09 SEP 06, 1997

FIRST LOCAL OUT FILTER-F PLL14 - D MKR 1.8103 GHz
REF 10.0 dBm AT 20 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 1596.6 MHz | 4.37 dBm |
| 2: | (B) Freq | 1810.3 MHz | 2.67 dBm |
| 3: | (C) Freq | 2024.1 MHz | 2.32 dBm |
| 4: | Inactive | | |

CENTER 1.8103 GHz
#RES BW 1.0 MHz VBW 300 kHz SPAN 500.0 MHz
SWP 20.0 msec

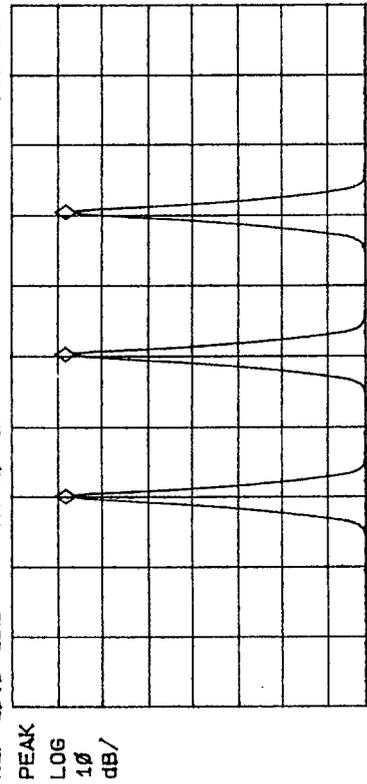
MEASUREMENT

- ① J1
- ② DCI

975.9 MHz FM
1187.9 MHz
1339.9 MHz

OK

17: 05: 22 SEP 06, 1997
 #7 SECOND LOCAL FILTER-6 PLL15-A MKR 611.710 MHz
 REF 10.0 dBm AT 20 dB



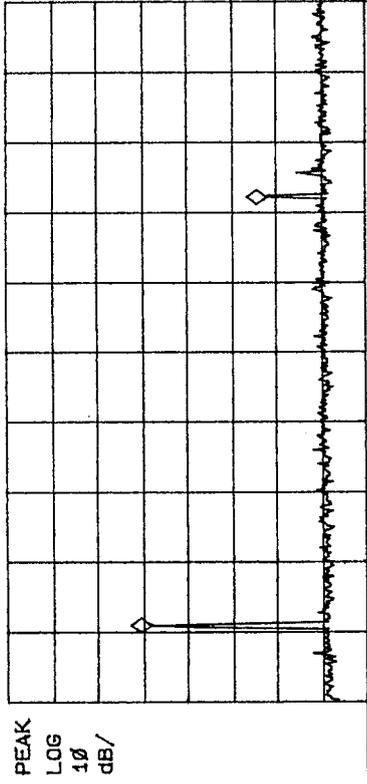
MEASUREMENT
 ① VC04-4
 ② AC

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|----------------|
| 1: | (A) Freq | 610.900 MHz | -4.24 dBm 2.3V |
| 2: | (A) Freq | 611.305 MHz | -4.24 dBm 2.6V |
| 3: | (A) Freq | 611.710 MHz | -4.27 dBm 2.8V |
| 4: | Inactive | | |

CENTER 611.300 MHz SPAN 2.000 MHz
 #RES BW 10 KHZ VBW 10 KHZ SWP 60.0 msec

1480.0 MHz FM
 5.8 MHz
 129.9 MHz

17: 13: 09 SEP 06, 1997
 #7 SECOND LOCAL FILTER-6 PLL15-B MKR 610 MHz
 REF 10.0 dBm AT 20 dB



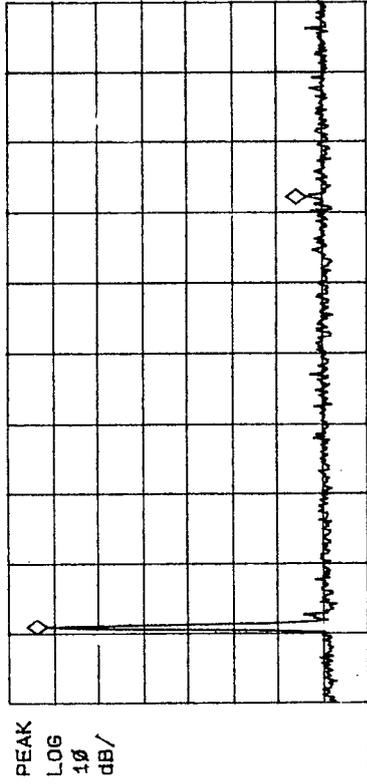
MEASUREMENT
 ① IC6-1
 ② AC

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 610 MHz | -21.86 dBm |
| 2: | (A) Freq | 1223 MHz | -47.98 dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz SPAN 1.000 GHz
 #RES BW 1.0 MHz VBW 300 KHZ SWP 20.0 msec

5.8 MHz FM

17: 15: 15 SEP 06, 1997
 #7 SECOND LOCAL FILTER-6 PLL15-C MKR 610 MHz
 REF 10.0 dBm AT 20 dB



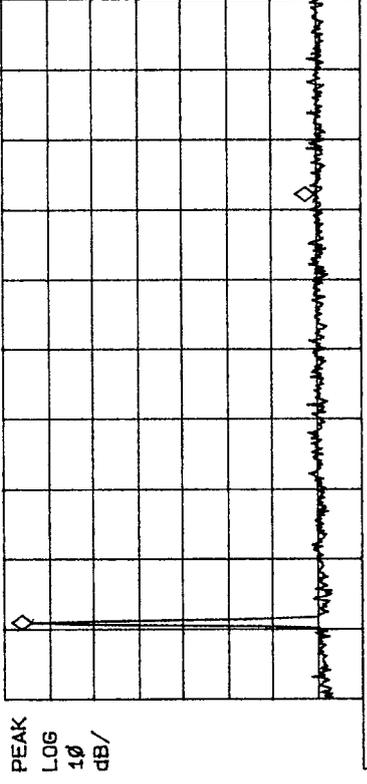
MEASUREMENT
 ① IC6-4
 ② AC

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 610 MHz | 1.35 dBm |
| 2: | (A) Freq | 1223 MHz | -56.78 dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz SPAN 1.000 GHz
 #RES BW 1.0 MHz VBW 300 KHZ SWP 20.0 msec

5.8 MHz FM

17: 18: 03 SEP 06, 1997
 #7 SECOND LOCAL FILTER-6 PLL15-D MKR 610 MHz
 REF 10.0 dBm AT 20 dB



MEASUREMENT
 ① J2
 ② DC2

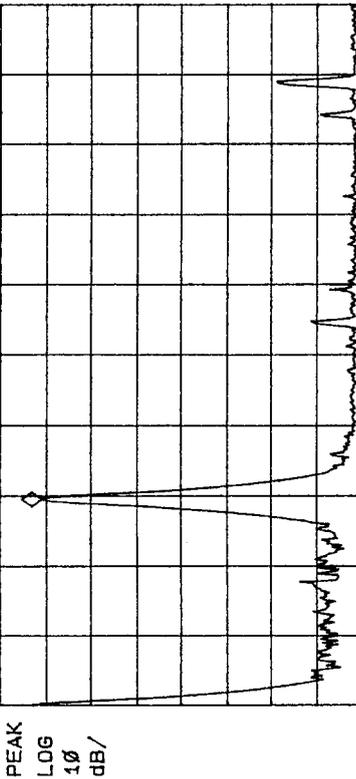
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 610 MHz | 3.71 dBm |
| 2: | (A) Freq | 1223 MHz | -59.98 dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 1.000 GHz SPAN 1.000 GHz
 #RES BW 1.0 MHz VBW 300 KHZ SWP 20.0 msec

5.8 MHz FM

16:20:53 SEP 06, 1997

SECOND LOCAL FILTER-J PLL16-A MKR 5.90 MHz
REF .0 dBm AT 10 dB



MEASUREMENT

- ① DBM1-1
- ② AC

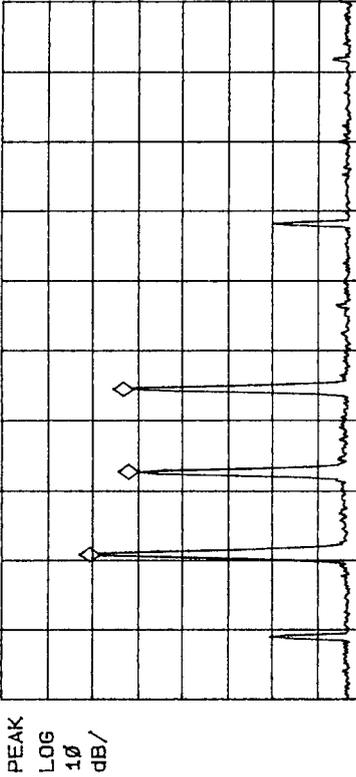
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 5.90 MHz | -9.31 dBm |
| 2: | Inactive | | |
| 3: | Inactive | | |
| 4: | Inactive | | |

129.9 MHz FM

CENTER 10.00 MHz SPAN 20.00 MHz
#RES BW 100 kHz VBW 30 kHz SWP 20.0 msec

16:27:31 SEP 06, 1997

SECOND LOCAL FILTER-J PLL16-B MKR 617.70 MHz
REF .0 dBm AT 10 dB



MEASUREMENT

- ① DBM1-2
- ② AC

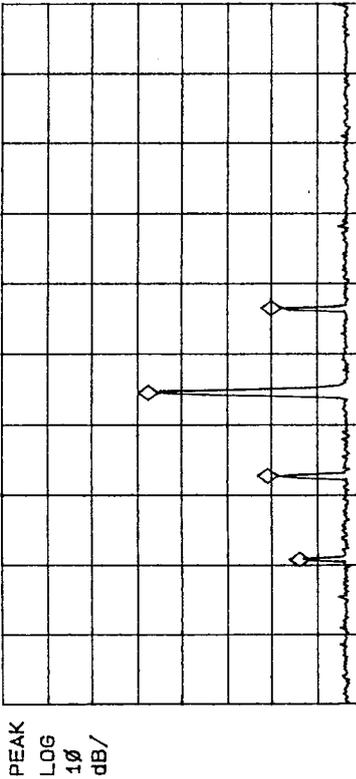
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 605.83 MHz | -21.67 dBm |
| 2: | (A) Freq | 611.83 MHz | -30.30 dBm |
| 3: | (A) Freq | 617.70 MHz | -29.15 dBm |
| 4: | Inactive | | |

129.9 MHz FM

CENTER 620.45 MHz SPAN 50.00 MHz
#RES BW 100 kHz VBW 30 kHz SWP 50.0 msec

16:30:09 SEP 06, 1997

SECOND LOCAL FILTER-J PLL16-C MKR 647.70 MHz
REF .0 dBm AT 10 dB



MEASUREMENT

- ① IC8-4
- ② AC

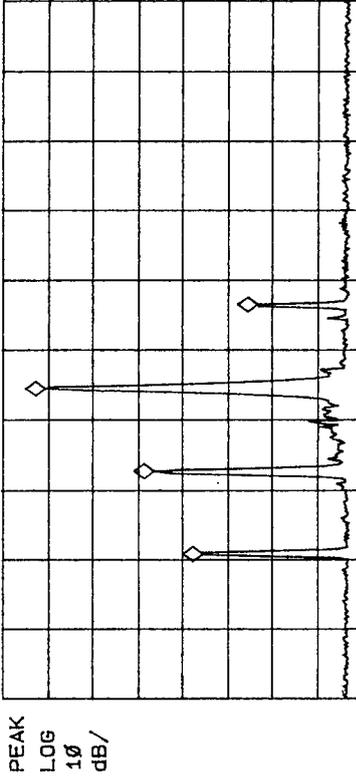
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 605.83 MHz | -68.50 dBm |
| 2: | (A) Freq | 611.83 MHz | -61.50 dBm |
| 3: | (A) Freq | 617.70 MHz | -34.87 dBm |
| 4: | (A) Freq | 623.70 MHz | -62.31 dBm |

129.9 MHz FM

CENTER 620.45 MHz SPAN 50.00 MHz
#RES BW 100 kHz VBW 30 kHz SWP 50.0 msec

16:32:36 SEP 06, 1997

SECOND LOCAL FILTER-J PLL16-D MKR 617.70 MHz
REF .0 dBm AT 10 dB



MEASUREMENT

- ① IC8-2
- ② AC

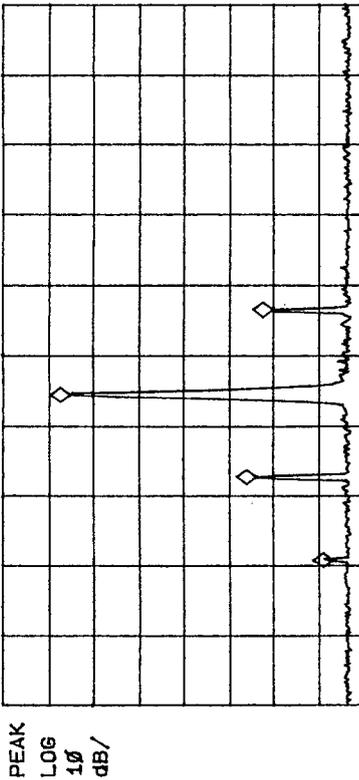
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 605.83 MHz | -44.62 dBm |
| 2: | (A) Freq | 611.83 MHz | -33.73 dBm |
| 3: | (A) Freq | 617.70 MHz | -9.57 dBm |
| 4: | (A) Freq | 623.70 MHz | -56.87 dBm |

129.9 MHz FM

CENTER 620.45 MHz SPAN 50.00 MHz
#RES BW 100 kHz VBW 30 kHz SWP 50.0 msec

16: 38: 06 SEP 06, 1997

SECOND LOCAL FILTER-J PLL17-A
REF .0 dBm AT 10 dB MKR 617.70 MHz
-14.98 dBm



MEASUREMENT

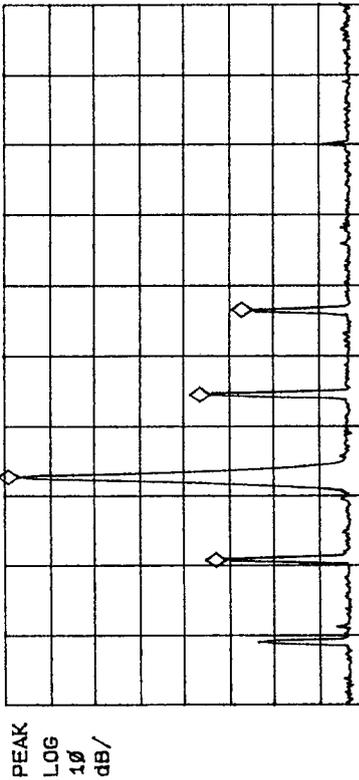
- ① IC3-8
- ② AC

129.9 MHz FM

CENTER 620.45 MHz
#RES BW 100 kHz VBW 30 kHz SPAN 50.00 MHz
SWP 50.0 msec

16: 48: 09 SEP 06, 1997

SECOND LOCAL FILTER-H PLL17-C
REF .0 dBm AT 10 dB MKR 611.83 MHz
-3.11 dBm



MEASUREMENT

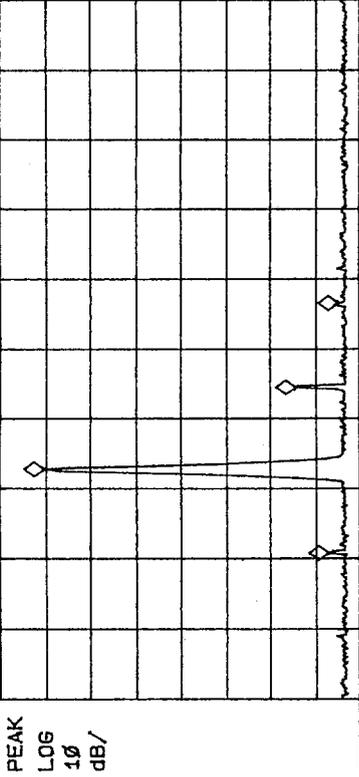
- ① IC7-2
- ② AC

129.9 MHz FM

CENTER 620.45 MHz
#RES BW 100 kHz VBW 30 kHz SPAN 50.00 MHz
SWP 50.0 msec

16: 44: 20 SEP 06, 1997

SECOND LOCAL FILTER-H PLL17-B
REF .0 dBm AT 10 dB MKR 611.83 MHz
-9.88 dBm



MEASUREMENT

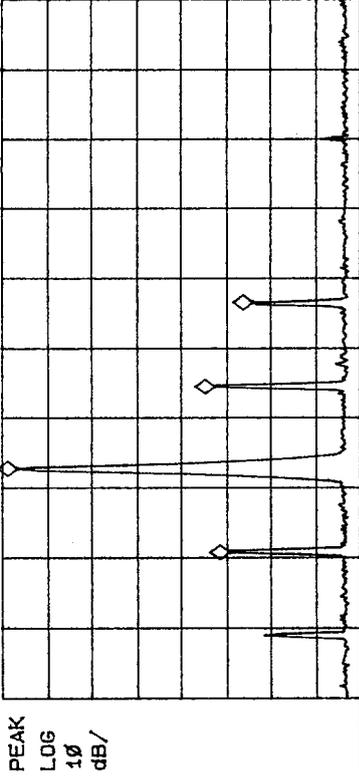
- ① IC7-4
- ② AC

129.9 MHz FM

CENTER 620.45 MHz
#RES BW 100 kHz VBW 30 kHz SPAN 50.00 MHz
SWP 50.0 msec

16: 51: 43 SEP 06, 1997

SECOND LOCAL FILTER-H PLL17-D
REF .0 dBm AT 10 dB MKR 611.83 MHz
-3.56 dBm



MEASUREMENT

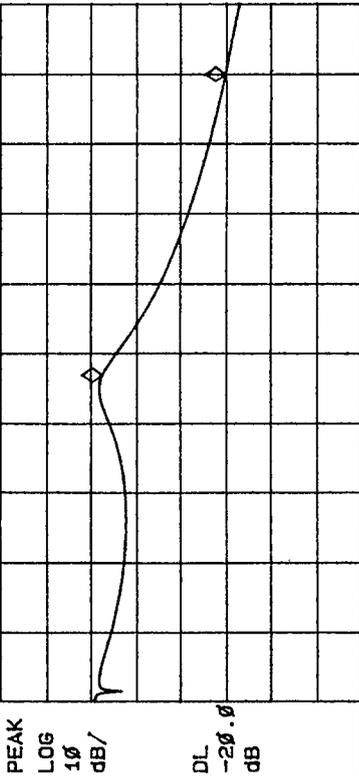
- ① DBM1-3
- ② AC

129.9 MHz FM

CENTER 620.45 MHz
#RES BW 100 kHz VBW 30 kHz SPAN 50.00 MHz
SWP 50.0 msec

20:05:27 SEP 05, 1997

SECOND LOCAL FILTER-K PLL18-A MKR 4.70 MHz -2.59 dB



1. IN
 ① R111 → L60
 ② LEVEL -20dBm
 ③ DC
 2. OUT
 ① L61 → R102
 ② DC

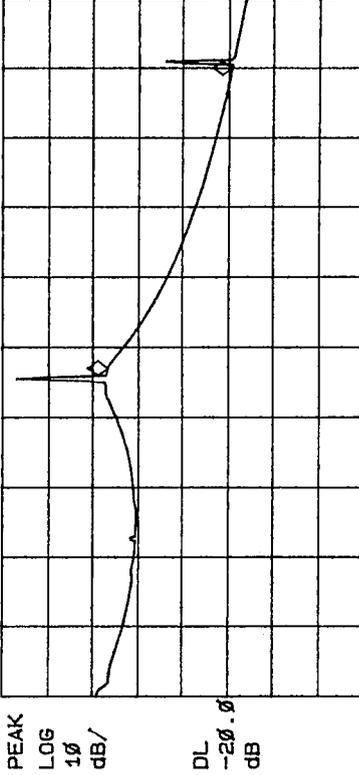
* pow OFF
 129.9 MHz CW

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 4.70 MHz | -2.59dBdL |
| 2: | (A) Freq | 9.00 MHz | -30.06dBdL |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 5.00 MHz #RES BW 10 kHz VBW 10 kHz SPAN 10.00 MHz SWP 300 msec

20:08:13 SEP 05, 1997

SECOND LOCAL FILTER-K PLL18-B MKR 4.70 MHz -3.45 dB



1. IN
 AK同シ
 2. OUT
 same as A

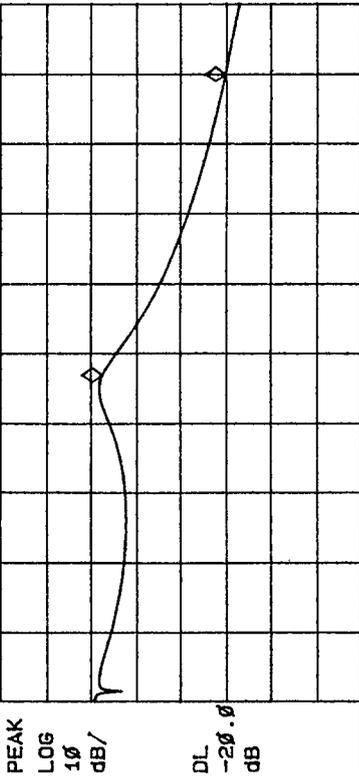
* pow ON
 129.9 MHz CW

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 4.70 MHz | -3.45dBdL |
| 2: | (A) Freq | 9.00 MHz | -30.99dBdL |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 5.00 MHz #RES BW 10 kHz VBW 10 kHz SPAN 10.00 MHz SWP 300 msec

20:21:53 SEP 05, 1997

SECOND LOCAL FILTER-K PLL18-C MKR 4.70 MHz -9.95 dB



1. IN
 ① R122 → L63
 ② LEVEL -20dBm
 ③ AC 0.1uF
 2. OUT
 ① J3
 ② DC2

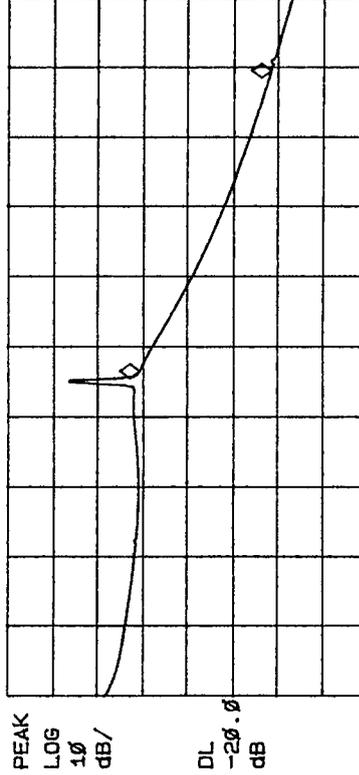
129.9 MHz CW

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 4.70 MHz | -9.95dBdL |
| 2: | (A) Freq | 9.00 MHz | -39.29dBdL |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 5.00 MHz #RES BW 10 kHz VBW 10 kHz SPAN 10.00 MHz SWP 300 msec

20:25:49 SEP 05, 1997

SECOND LOCAL FILTER-K PLL18-D MKR 4.70 MHz -9.48 dB



1. IN
 ① R122 → L63
 ② LEVEL -20dBm
 ③ DC
 2. OUT
 same as C

129.9 MHz CW

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 4.70 MHz | -9.48dBdL |
| 2: | (A) Freq | 9.00 MHz | -38.59dBdL |
| 3: | Inactive | | |
| 4: | Inactive | | |

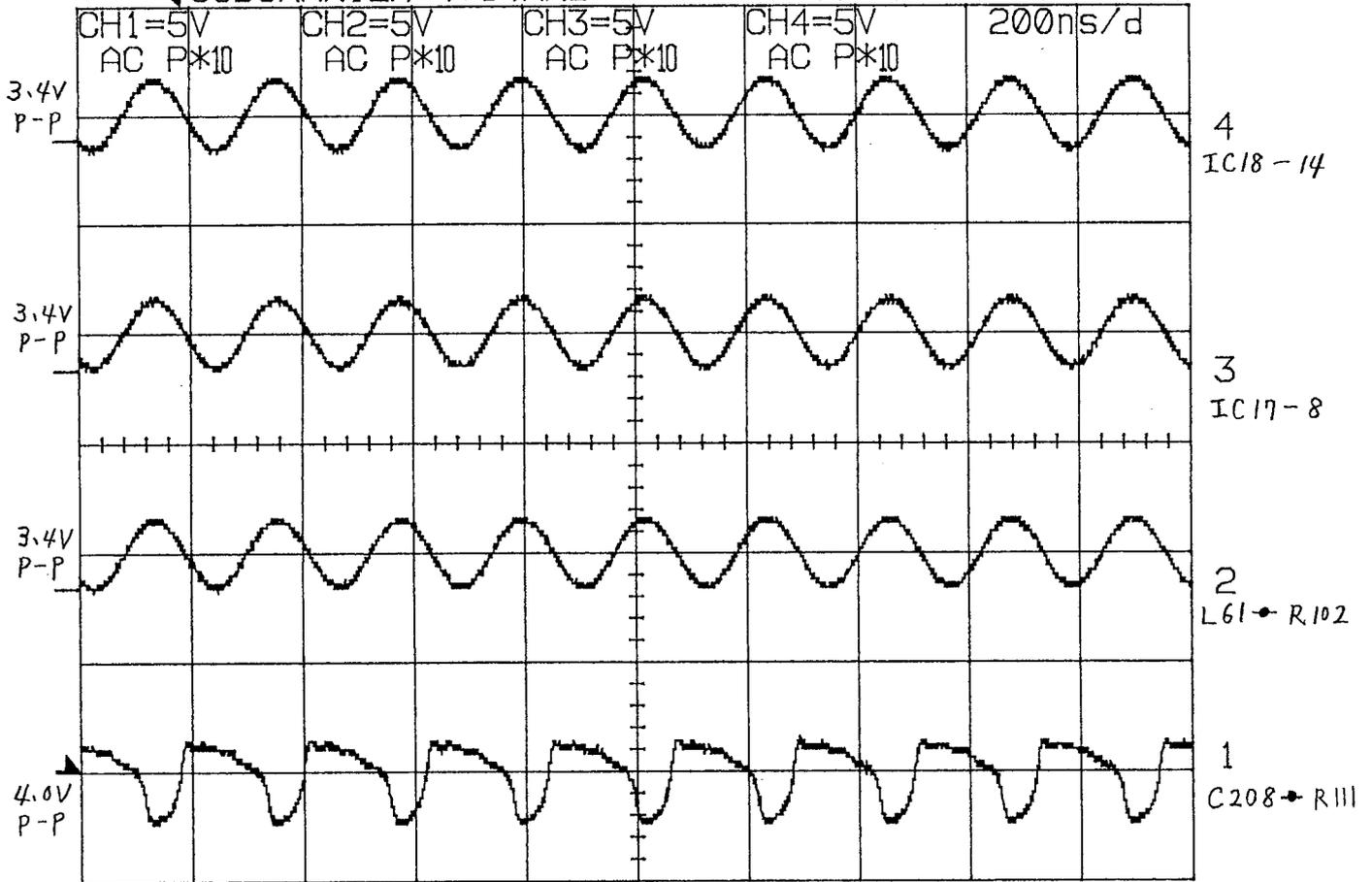
CENTER 5.00 MHz #RES BW 3.0 kHz VBW 3 kHz SPAN 1.00 MHz SWP 333 msec

129.9 MHz CW pitch 1kHz

PLL19

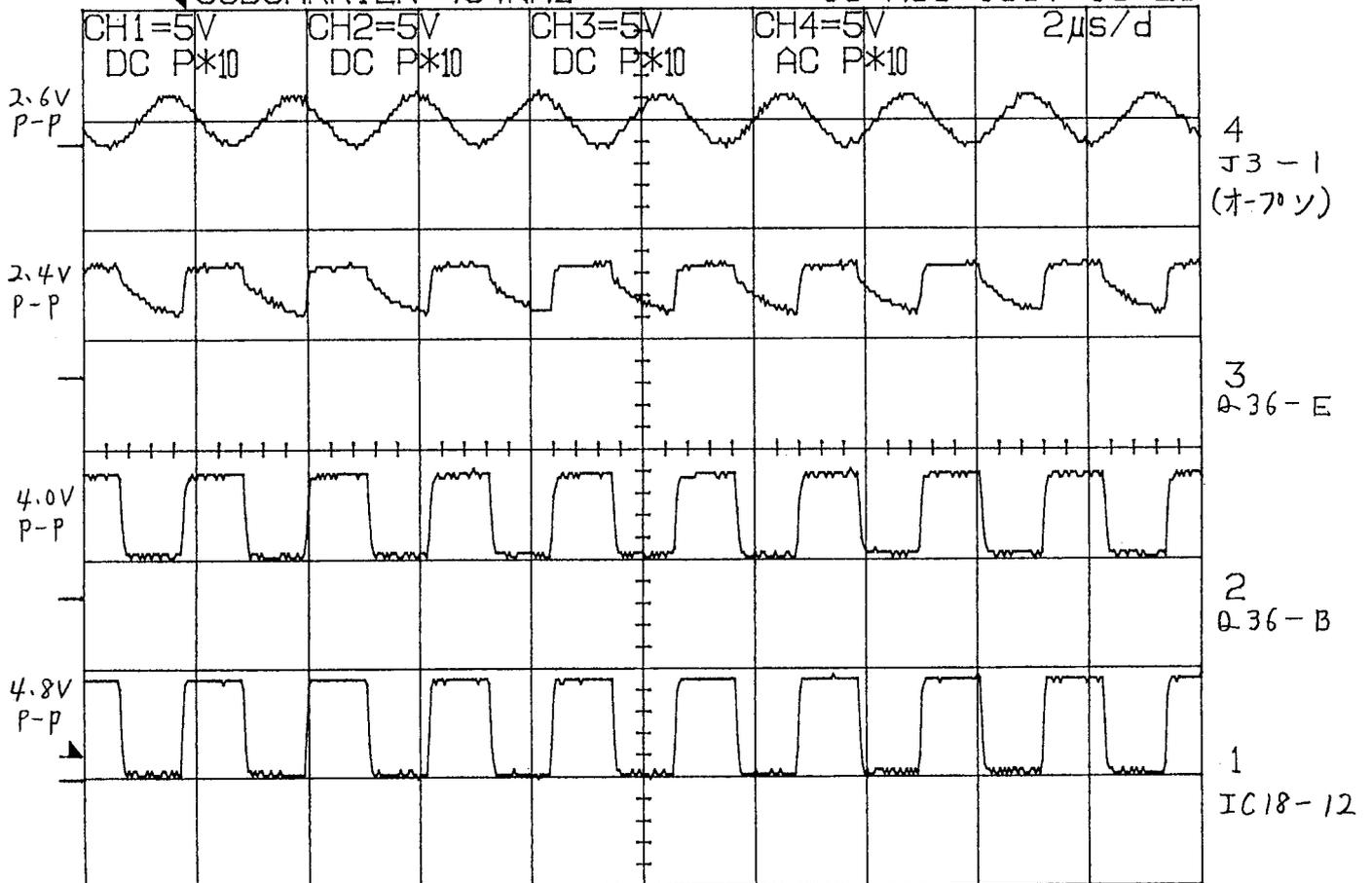
↓ SUBCARRIER 4.54 MHz

09-AUG-1997 15:31



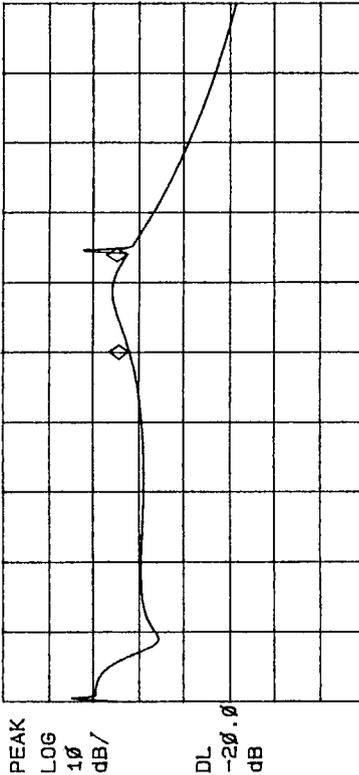
↓ SUBCARRIER 454 KHz

09-AUG-1997 15:25



10:22:43 SEP 06, 1997

STD FILTER-M (INT 12.8MHz) PLL20 - A MKR 12.80 MHz
REF .0 dBm AT 10 dB



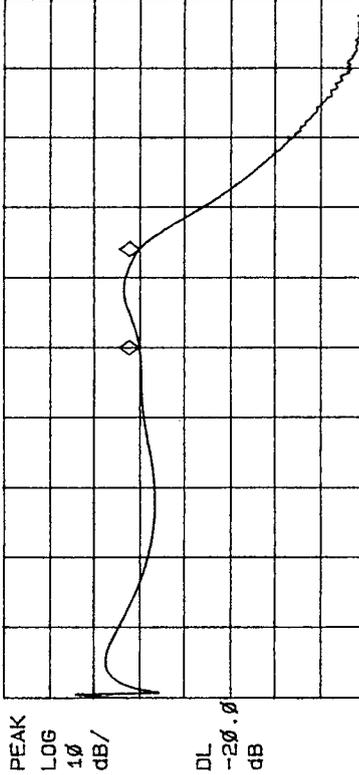
1. IN
 ① C223 → L65
 ② LEVEL
 -20dBm
 ③ DC
 2. OUT
 ① L66 → C209
 ② DC
 129.9MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 10.00 MHz | | -8.03dBm |
| 2: | (A) | 12.80 MHz | | -7.48dBm |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 10.00 MHz
 #RES BW 30 KHz VBW 30 KHz SPAN 20.00 MHz SWP 66.7 msec

10:35:13 SEP 06, 1997

STD FILTER-M/N (EXT 10.0MHz) PLL20 - B MKR 10.00 MHz
REF .0 dBm AT 10 dB



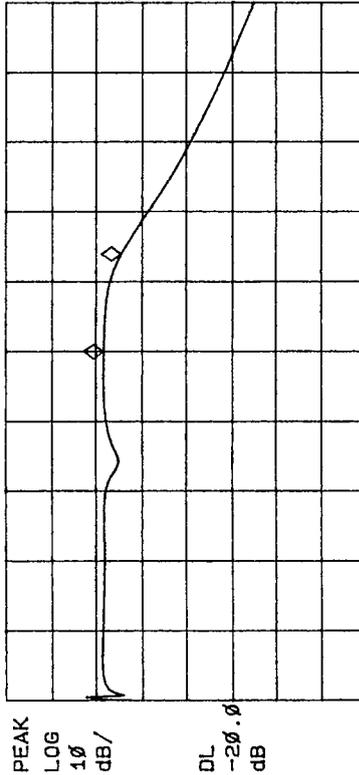
1. IN
 ① J4
 ② LEVEL
 -20dBm
 ③ DC2
 2. OUT
 Same as A
 129.9MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 10.00 MHz | | -10.03dBm |
| 2: | (A) | 12.80 MHz | | -10.14dBm |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 10.00 MHz
 #RES BW 30 KHz VBW 30 KHz SPAN 20.00 MHz SWP 66.7 msec

10:28:33 SEP 06, 1997

STD FILTER-N (EXT 10.0MHz) PLL20 - C MKR 10.00 MHz
REF .0 dBm AT 10 dB



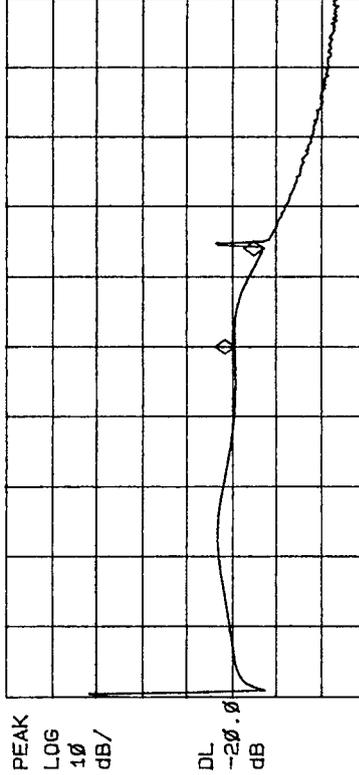
1. IN
 ① J4
 ② LEVEL
 -20dBm
 ③ DC2
 2. OUT
 ① L68 → C225
 ② DC
 129.9MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 10.00 MHz | | -1.68dBm |
| 2: | (A) | 12.80 MHz | | -5.65dBm |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 10.00 MHz
 #RES BW 30 KHz VBW 30 KHz SPAN 20.00 MHz SWP 66.7 msec

10:31:12 SEP 06, 1997

STD FILTER-N (INT 12.8MHz) PLL20 - D MKR 10.00 MHz
REF .0 dBm AT 10 dB



1. IN
 Same as C
 2. OUT
 Same as C
 129.9MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 10.00 MHz | | -30.81dBm |
| 2: | (A) | 12.80 MHz | | -37.33dBm |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

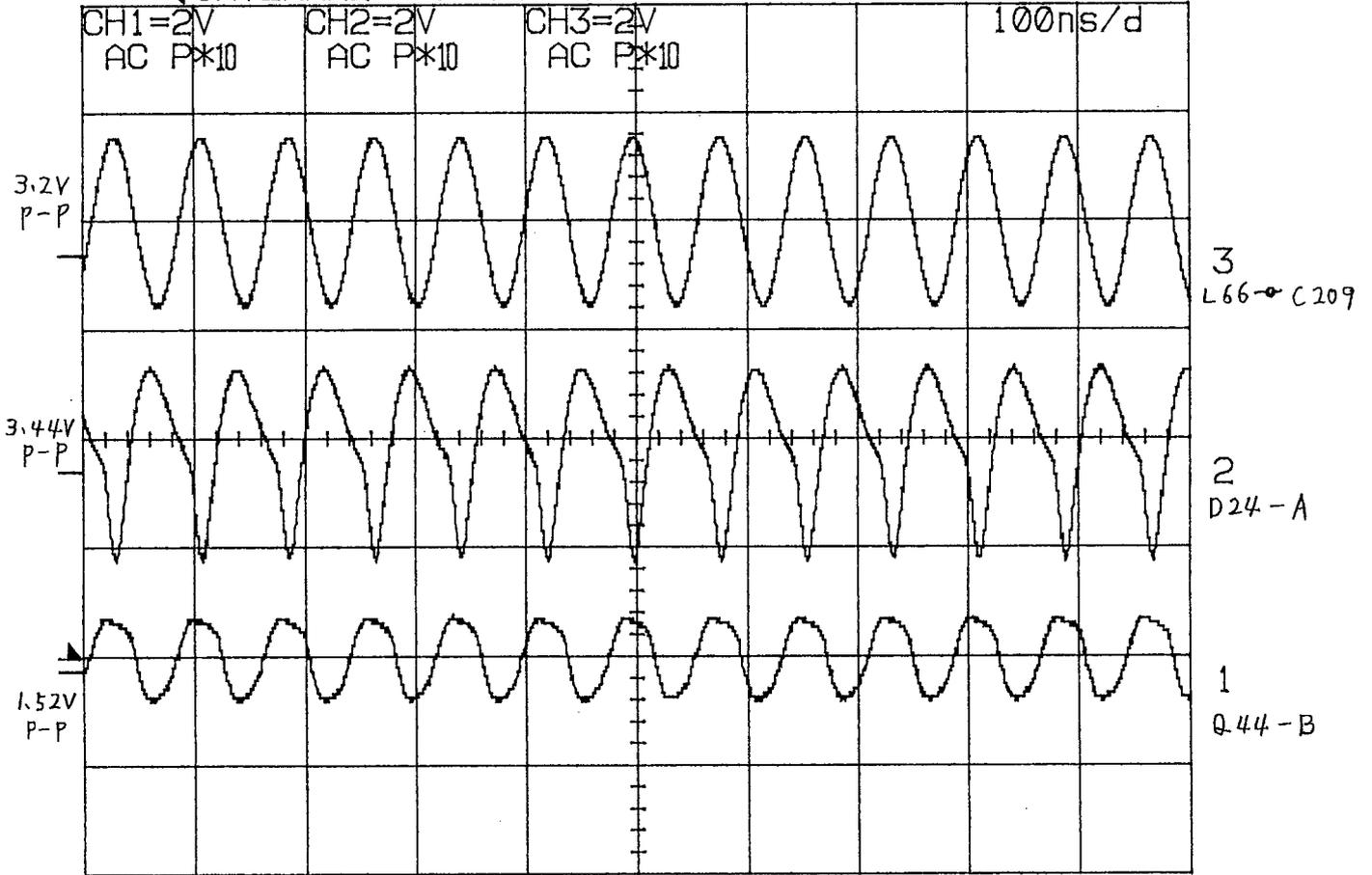
CENTER 10.00 MHz
 #RES BW 30 KHz VBW 30 KHz SPAN 20.00 MHz SWP 66.7 msec

129.9MHz FM

PLL 21

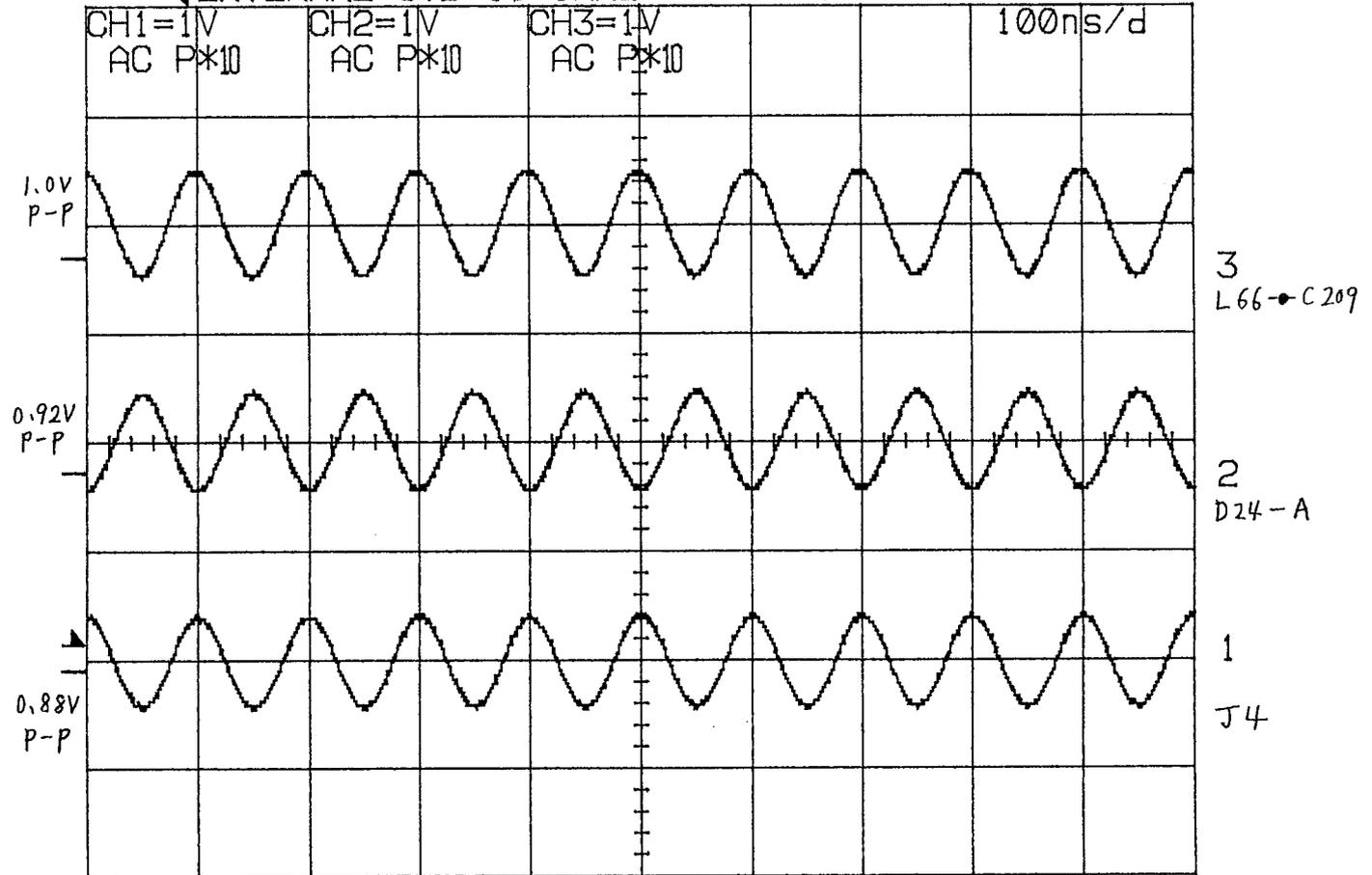
INTERNAL STD 12.8MHz

09-AUG-1997 10:02



EXTERNAL STD 10.0MHz

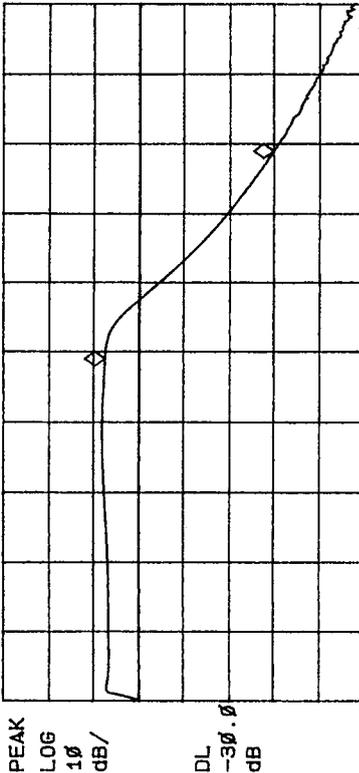
09-AUG-1997 10:08



16:49:26 SEP 10, 1997

FRONTI - A

BAND1 LPF AT 10 dB MKR 500 KHZ
REF .0 dBm 7.42 dB



| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 0.500 MHz | | 7.42dB |
| 2: | (A) | 0.800 MHz | | -30.06dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 510 KHZ RES BW 10 KHZ VBW 10 KHZ SPAN 1.000 MHZ SWP 30.0 msec

1. IN

① ANT 1

② LEVEL -30dBm

2. OUT

① R296 OPEN

② R296 - C139

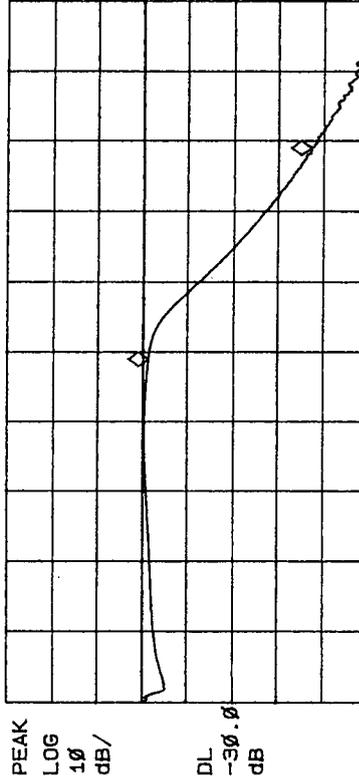
③ DC

10KHZ FM

16:45:25 SEP 10, 1997

FRONTI - B

BAND1 LPF AT 10 dB MKR 500 KHZ
REF .0 dBm -1.33 dB



| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 0.500 MHz | | -1.33dB |
| 2: | (A) | 0.800 MHz | | -37.49dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 510 KHZ RES BW 10 KHZ VBW 10 KHZ SPAN 1.000 MHZ SWP 30.0 msec

1. IN

Same as A

2. OUT

Same as A

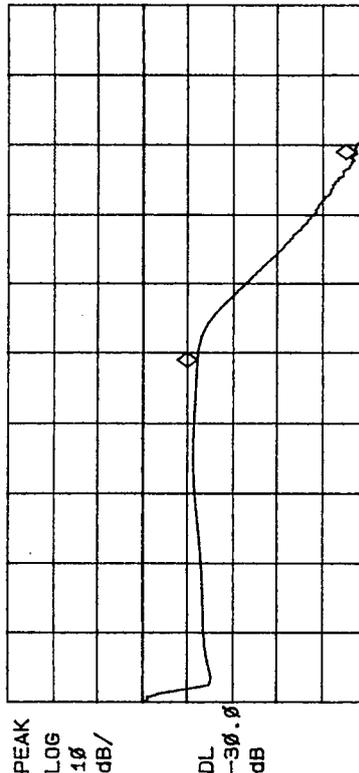
10KHZ FM

ATT = 10 dB

16:47:35 SEP 10, 1997

FRONTI - C

BAND1 LPF AT 10 dB MKR 500 KHZ
REF .0 dBm -12.24 dB



| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 0.500 MHz | | -12.24dB |
| 2: | (A) | 0.800 MHz | | -47.77dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 510 KHZ RES BW 10 KHZ VBW 10 KHZ SPAN 1.000 MHZ SWP 30.0 msec

1. IN

Same as A

2. OUT

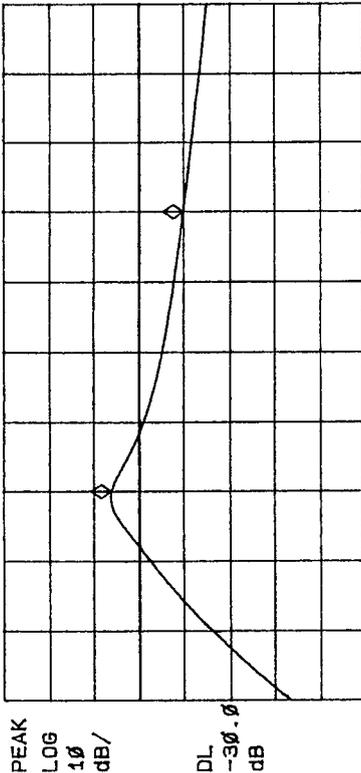
Same as A

10KHZ FM

ATT = 20 dB

17: 14: 26 SEP 10, 1997
BAND4 TUNE-BPF

FRONT2 - A
AT 10 dB
MKR 500 KHZ
6.12 dB



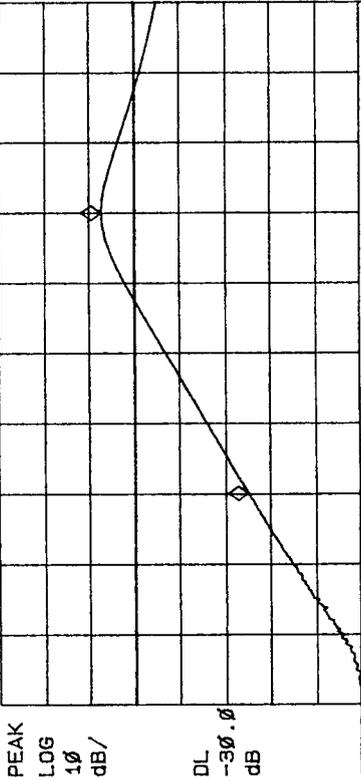
1. IN
 ① ANTI
 ② LEVEL
 -30dBm
 2. OUT
 ① R296 OPEN
 ② R296 → C139
 ③ DC
 500KHZ FM
 D/A = 34 (TUNE)

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|-----------|
| 1: | (A) | 500 MHz | | 6.12dB |
| 2: | (A) | 500 MHz | | -9.92dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 700 KHZ
 RES BW 10 KHZ
 VBW 10 KHZ
 SPAN 1.000 MHz
 SWP 30.0 msec

17: 19: 31 SEP 10, 1997
BAND4 TUNE-BPF

FRONT2 - B
AT 10 dB
MKR 900 KHZ
7.21 dB



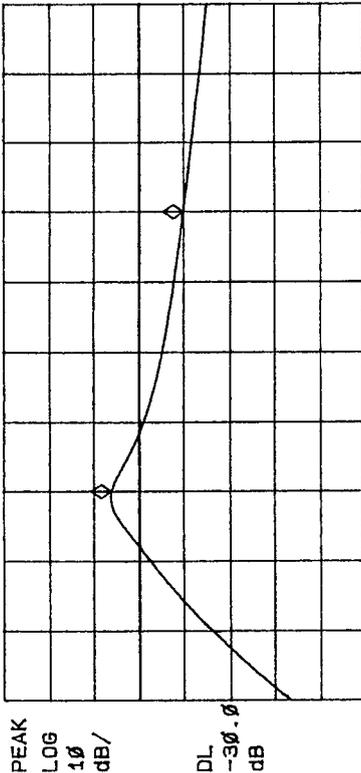
1. IN
 Same as A
 2. OUT
 Same as A

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|-----------|
| 1: | (A) | 900 MHz | | -25.24dB |
| 2: | (A) | 900 MHz | | 7.21dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 700 KHZ
 RES BW 10 KHZ
 VBW 10 KHZ
 SPAN 1.000 MHz
 SWP 30.0 msec

17: 34: 49 SEP 10, 1997
BAND5 TUNE-FILTER

FRONT2 - C
AT 10 dB
MKR 900 KHZ
7.02 dB



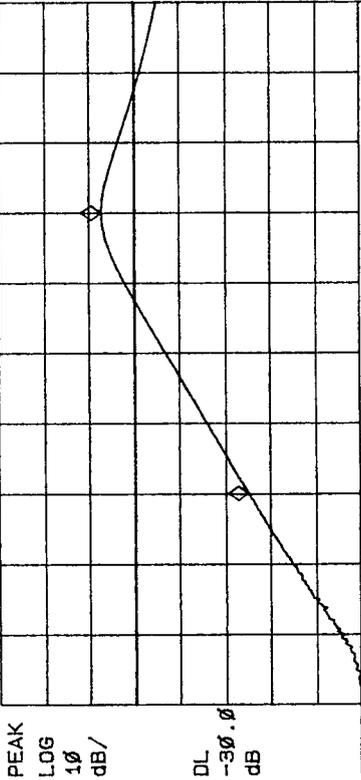
1. IN
 A & B
 2. OUT
 Same as A
 900KHZ FM
 D/A = 39 (TUNE)

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 900 MHz | | 7.02dB |
| 2: | (A) | 2.000 MHz | | -23.54dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 1.450 MHz
 RES BW 10 KHZ
 VBW 10 KHZ
 SPAN 2.000 MHz
 SWP 60.0 msec

17: 32: 45 SEP 10, 1997
BAND5 TUNE-FILTER

FRONT2 - D
AT 10 dB
MKR 1.995 MHz
11.42 dB



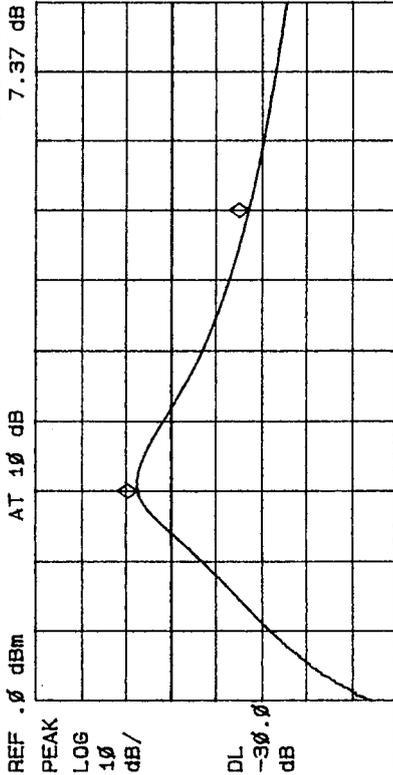
1. IN
 Same as A
 2. OUT
 Same as A
 1.999 MHz FM
 D/A = 230 (TUNE)

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 900 MHz | | -40.13dB |
| 2: | (A) | 1.995 MHz | | 11.42dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 1.450 MHz
 RES BW 10 KHZ
 VBW 10 KHZ
 SPAN 2.000 MHz
 SWP 60.0 msec

17:49:01 SEP 10, 1997

BAND6 TUNE-BPF FRONT3 - A MKR 2.000 MHz 7.37 dB



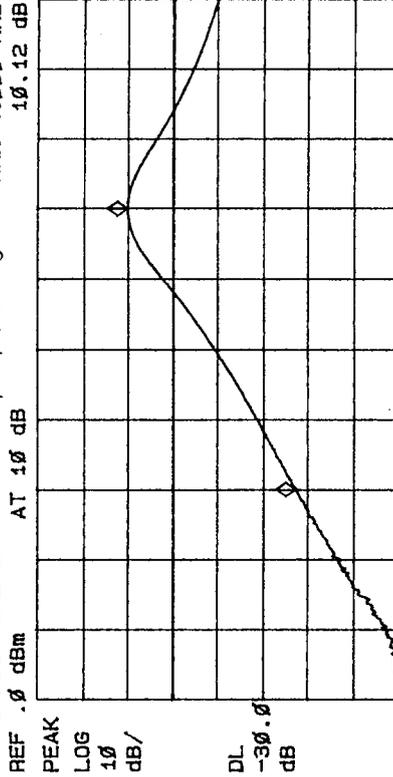
1. IN
 ① ANTI
 ② LEVEL -30dBm
 2. OUT
 ① R296 OPEN
 ② R296 ← C139
 ③ DC
 2.0 MHz FM
 D/A = 66 (TUNE)

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 2.000 MHz | | 7.37dB |
| 2: | (A) | 4.000 MHz | | -17.46dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 3.000 MHz SPAN 5.000 MHz
 RES BW 30 kHz VBW 30 kHz SWP 20.0 msec

17:47:36 SEP 10, 1997

BAND6 TUNE-BPF FRONT3 - B MKR 4.000 MHz 10.12 dB



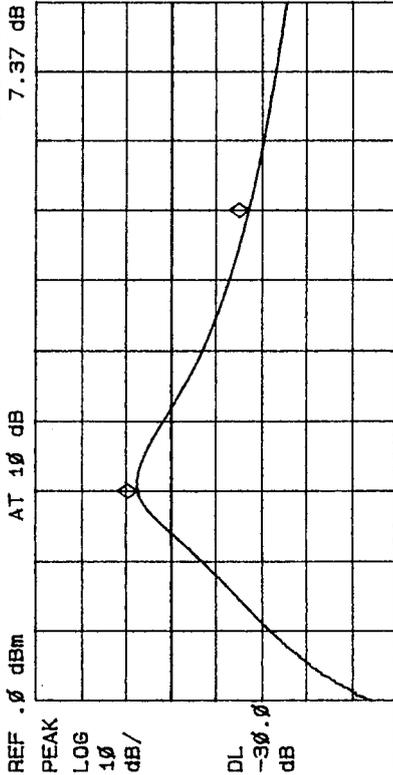
1. IN
 Same as A
 2. OUT
 Same as A
 3. 999 MHz FM
 D/A = 230 (TUNE)

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|-----------|------|-----------|
| 1: | (A) | 2.000 MHz | | -27.49dB |
| 2: | (A) | 4.000 MHz | | 10.12dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 3.000 MHz SPAN 5.000 MHz
 RES BW 30 kHz VBW 30 kHz SWP 20.0 msec

18:02:32 SEP 10, 1997

BAND7 TUNE-BPF FRONT3 - C MKR 4.000 MHz 7.94 dB



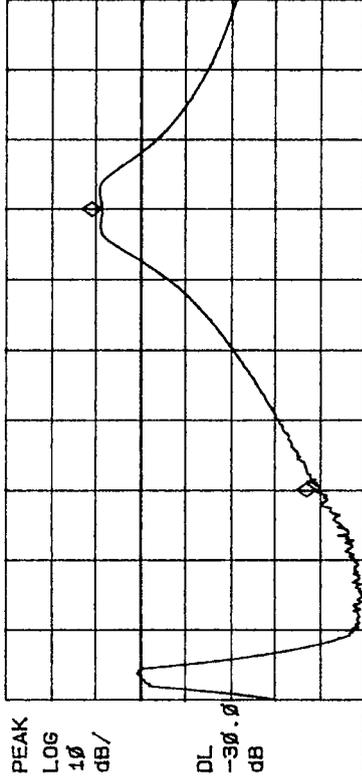
1. IN
 Same as A
 2. OUT
 Same as A
 4.000 MHz FM
 D/A = 65 (TUNE)

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|------------|------|-----------|
| 1: | (A) | 4.000 MHz | | 7.94dB |
| 2: | (A) | 10.000 MHz | | -28.04dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 7.000 MHz SPAN 15.000 MHz
 RES BW 100 kHz VBW 30 kHz SWP 20.0 msec

18:00:22 SEP 10, 1997

BAND7 TUNE-BPF FRONT3 - D MKR 10.000 MHz 8.59 dB



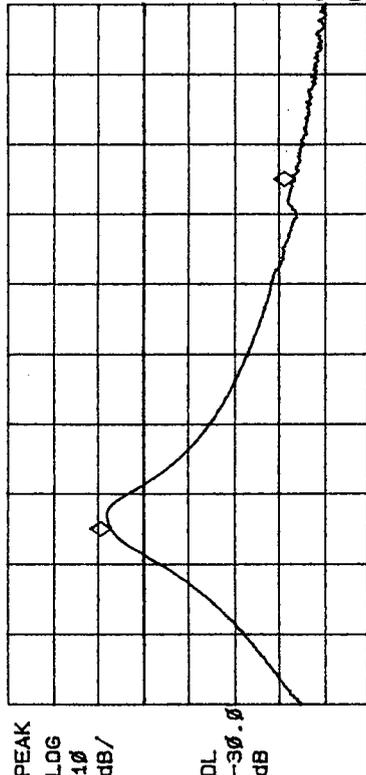
1. IN
 Same as A
 2. OUT
 Same as A
 7.999 MHz FM
 D/A = 220 (TUNE)

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|------------|------|-----------|
| 1: | (A) | 4.000 MHz | | -39.38dB |
| 2: | (A) | 10.000 MHz | | 8.59dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 7.000 MHz SPAN 15.000 MHz
 RES BW 100 kHz VBW 30 kHz SWP 20.0 msec

18: 24: 11 SEP 10, 1997

FRONT4 - A
BAND8 TUNE-BPF
REF .0 dBm AT 10 dB



1. IN
 ① ANTI
 ② LEVEL
 -30dBm
 2. OUT
 ① R276 OPEN
 ② R276 → C139
 ③ DC

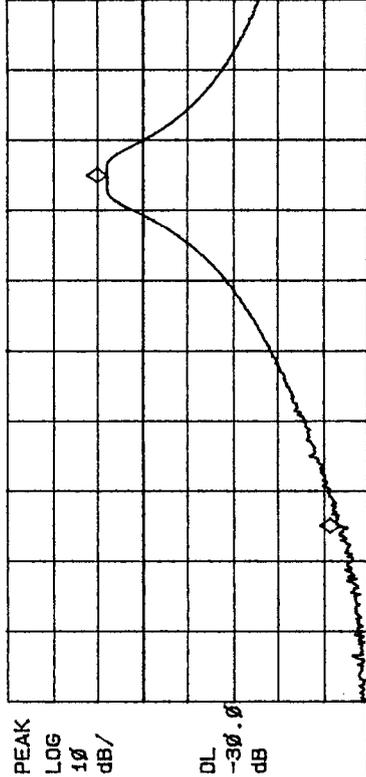
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 10.00 MHz | 7.15dBm |
| 2: | (A) Freq | 20.00 MHz | -33.50dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 15.00 MHz
 RES BW 100 kHz
 VBW 30 kHz
 SPAN 20.00 MHz
 SWP 20.00 msec

10.000 MHz FM
 D/A = 35 (TUNE)

18: 25: 53 SEP 10, 1997

FRONT4 - B
BAND8 TUNE-BPF
REF .0 dBm AT 10 dB



1. IN
 same as A
 2. OUT
 same as A

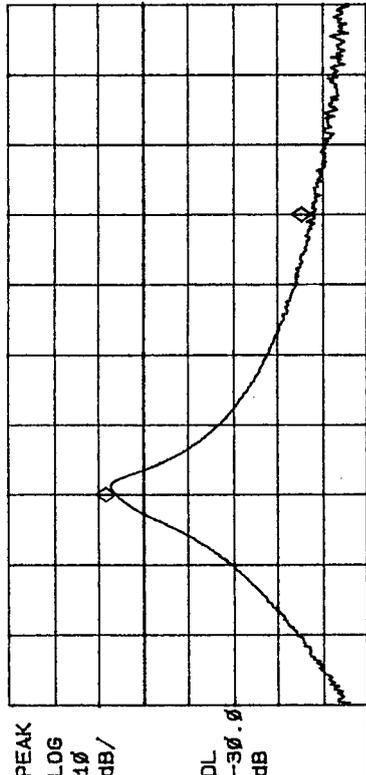
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 10.00 MHz | -43.83dBm |
| 2: | (A) Freq | 20.00 MHz | 7.85dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 15.00 MHz
 RES BW 100 kHz
 VBW 30 kHz
 SPAN 20.00 MHz
 SWP 20.00 msec

19.999 MHz FM
 D/A = 193 (TUNE)

18: 41: 08 SEP 10, 1997

FRONT4 - C
BAND9 TUNE-BPF
REF .0 dBm AT 10 dB



1. IN
 same as A
 2. OUT
 same as A

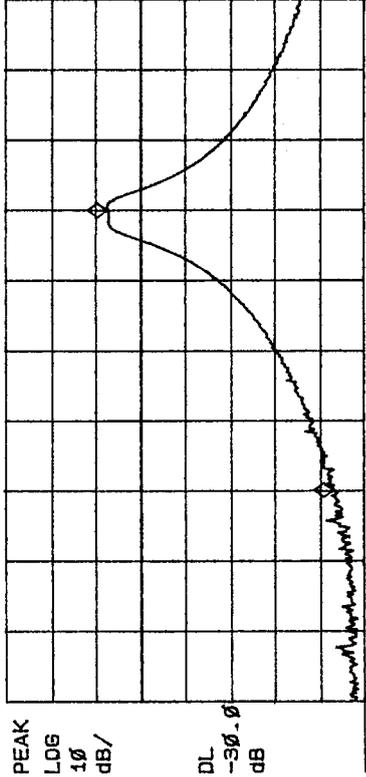
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 20.00 MHz | 6.11dBm |
| 2: | (A) Freq | 40.00 MHz | -37.73dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 30.00 MHz
 RES BW 300 kHz
 VBW 100 kHz
 SPAN 50.00 MHz
 SWP 20.00 msec

20.000 MHz FM
 D/A = 32 (TUNE)

18: 39: 25 SEP 10, 1997

FRONT4 - D
BAND9 TUNE-BPF
REF .0 dBm AT 10 dB



1. IN
 same as A
 2. OUT
 same as A

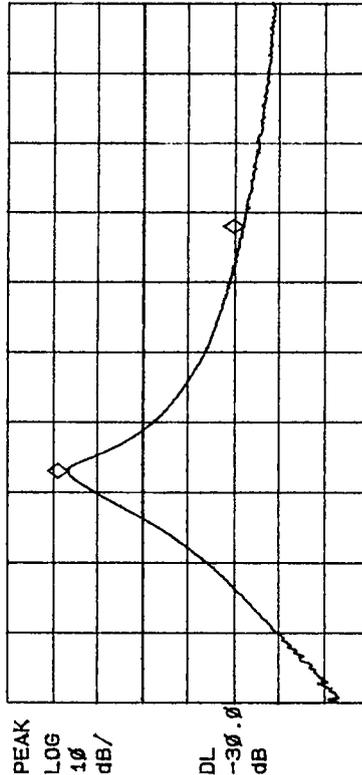
| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 20.00 MHz | -43.21dBm |
| 2: | (A) Freq | 40.00 MHz | 7.36dBm |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 30.00 MHz
 RES BW 300 kHz
 VBW 100 kHz
 SPAN 50.00 MHz
 SWP 20.00 msec

39.999 MHz FM
 D/A = 195 (TUNE)

11:33:11 SEP 11, 1997
 BAND10 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT5 - A
 MKR 40.0 MHz
 16.47 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 40.0 MHz | 16.47dBOL |
| 2: | (A) | 75.0 MHz | -22.29dBOL |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 57.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 100.0 MHz
 SWP 20.0 msec

1. IN

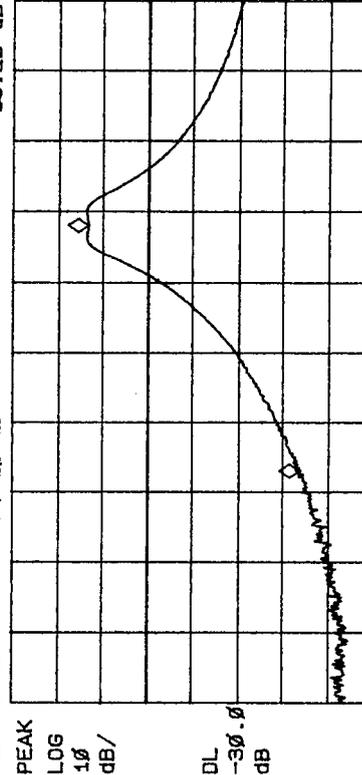
① ANTI
 ② LEVEL
 -30dBm

2. OUT
 ① R276 OPEN
 ② R296 ← C139
 ③ DC

40.000 MHz FM
 D/A = 53 (TUNE)

11:31:44 SEP 11, 1997
 BAND10 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT5 - B
 MKR 75.0 MHz
 13.23 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 40.0 MHz | -33.85dBOL |
| 2: | (A) | 75.0 MHz | 13.23dBOL |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 57.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 100.0 MHz
 SWP 20.0 msec

1. IN

Same as A

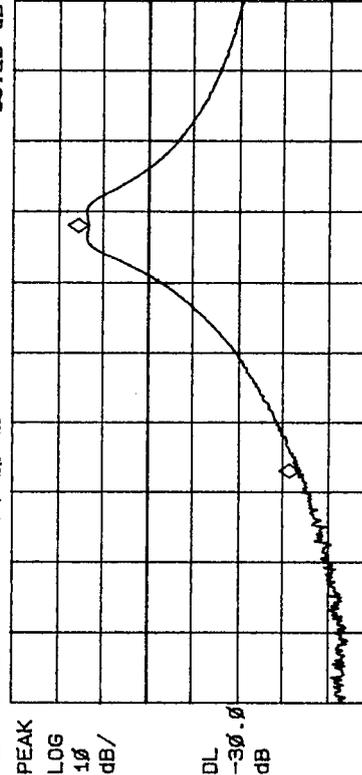
2. OUT

Same as A

74.999 MHz FM
 D/A = 205 (TUNE)

11:23:10 SEP 11, 1997
 BAND11 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT5 - D
 MKR 150.0 MHz
 14.77 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 75.0 MHz | -37.47dBOL |
| 2: | (A) | 150.0 MHz | 14.77dBOL |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 112.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 200.0 MHz
 SWP 20.0 msec

1. IN

Same as A

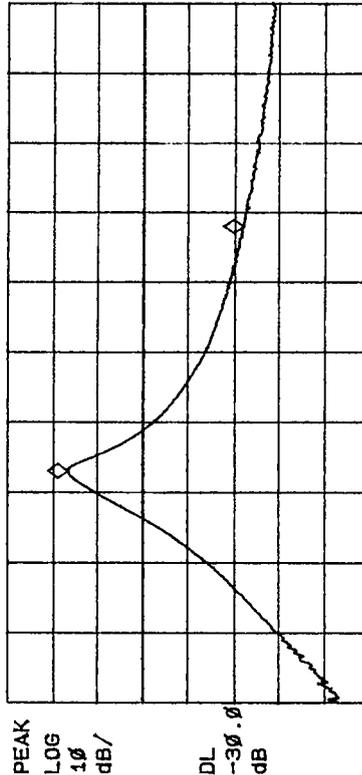
2. OUT

Same as A

149.999 MHz FM
 D/A = 240 (TUNE)

11:25:03 SEP 11, 1997
 BAND11 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT5 - C
 MKR 75.0 MHz
 14.93 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) | 75.0 MHz | 14.93dBOL |
| 2: | (A) | 150.0 MHz | -26.41dBOL |
| 3: | Inactive | | |
| 4: | Inactive | | |

CENTER 112.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 200.0 MHz
 SWP 20.0 msec

1. IN

Same as A

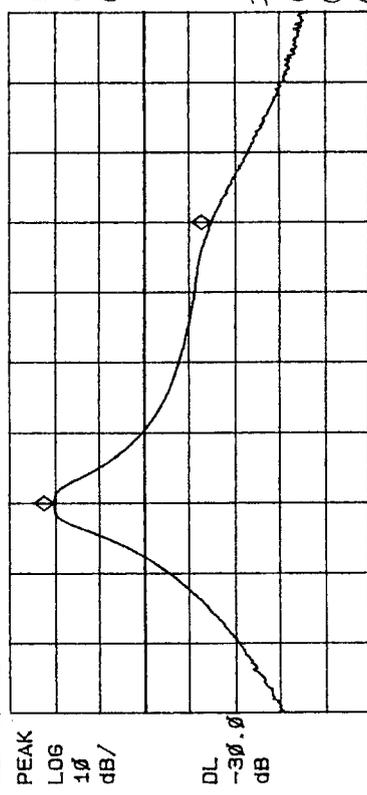
2. OUT

Same as A

75.000 MHz FM
 D/A = 52 (TUNE)

11: 44: 54 SEP 11, 1997
 BAND12 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT6 - A
 MKR 150.0 MHz
 20.02 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 150.0 MHz | 20.02dB |
| 2: | (A) Freq | 230.0 MHz | -15.05dB |
| 3: | Inactive | | |
| 4: | Inactive | | |

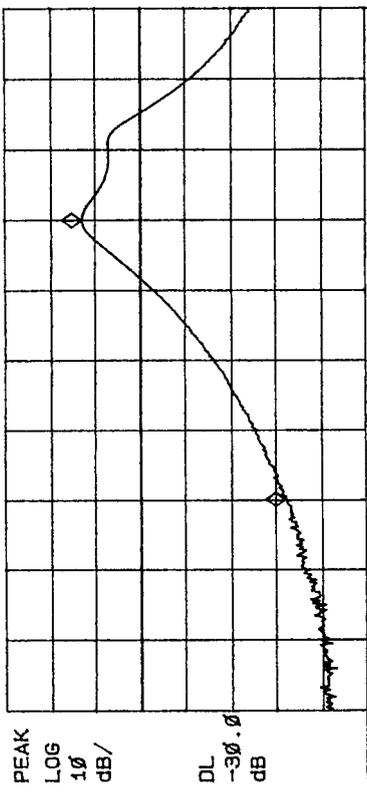
CENTER 190.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 200.0 MHz
 SWP 20.0 msec

1. IN
 ANTI
 LEVEL
 -30dBm
 2. OUT
 R 296 OPEN
 R 296 C139
 DC

150.000 MHz FM
 D/A = 39 (TUNE)

11: 42: 41 SEP 11, 1997
 BAND12 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT6 - B
 MKR 230.0 MHz
 12.87 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 150.0 MHz | -32.28dB |
| 2: | (A) Freq | 230.0 MHz | 12.87dB |
| 3: | Inactive | | |
| 4: | Inactive | | |

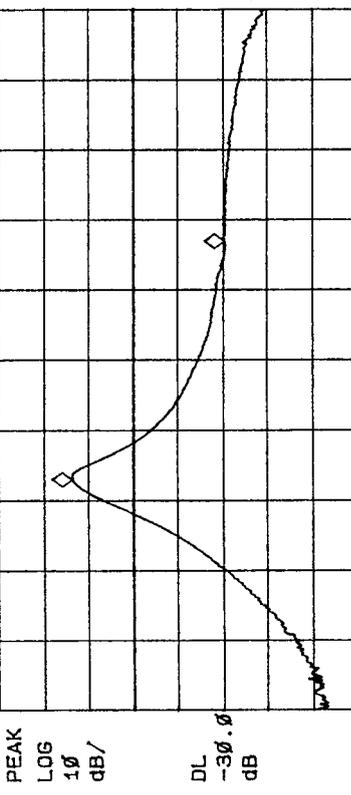
CENTER 190.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 200.0 MHz
 SWP 20.0 msec

1. IN
 Same as A
 2. OUT
 Same as A

230.000 MHz FM
 D/A = 230 (TUNE)

11: 56: 49 SEP 11, 1997
 BAND13 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT6 - C
 MKR 230.0 MHz
 13.52 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 230.0 MHz | 13.52dB |
| 2: | (A) Freq | 400.0 MHz | -20.58dB |
| 3: | Inactive | | |
| 4: | Inactive | | |

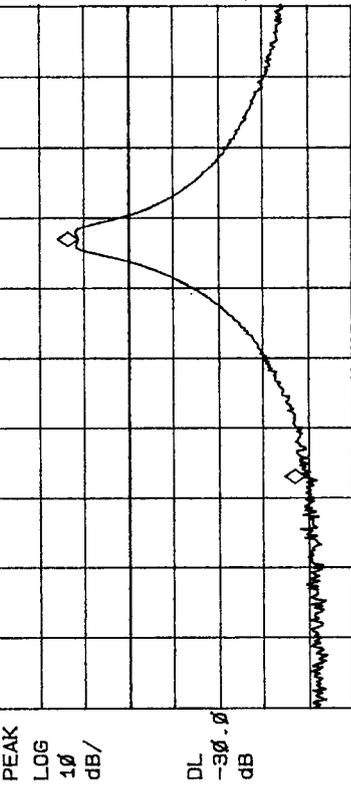
CENTER 315.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 500.0 MHz
 SWP 20.0 msec

1. IN
 Same as A
 2. OUT
 Same as A

230.000 MHz FM
 D/A = 14 (TUNE)

11: 56: 43 SEP 11, 1997
 BAND13 TUNE-BPF
 REF .0 dBm AT 10 dB

FRONT6 - D
 MKR 400.0 MHz
 11.24 dB



| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 230.0 MHz | -39.40dB |
| 2: | (A) Freq | 400.0 MHz | 11.24dB |
| 3: | Inactive | | |
| 4: | Inactive | | |

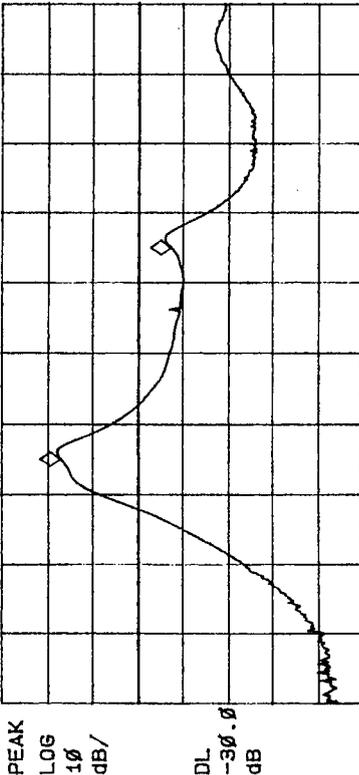
CENTER 315.0 MHz
 RES BW 1.0 MHz
 VBW 300 kHz
 SPAN 500.0 MHz
 SWP 20.0 msec

1. IN
 Same as A
 2. OUT
 Same as A

399.999 MHz FM
 D/A = 139 (TUNE)

13:05:25 SEP 11, 1997

BAND14 TUNE-BPF FRONT7-A MKR 400 MHz
REF .0 dBm AT 10 dB



| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|-----------|
| 1: | (A) | 400 MHz | | 17.02dB |
| 2: | (A) | 700 MHz | | -7.25dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 550 MHz SPAN 1.000 GHz
#RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

1. IN
① ANTI
② LEVEL
-30 dBm
2. OUT
① R297 OPEN
② R297 ← C288
③ DC
400.000 MHz FM
D/A = 22 (TUNE)

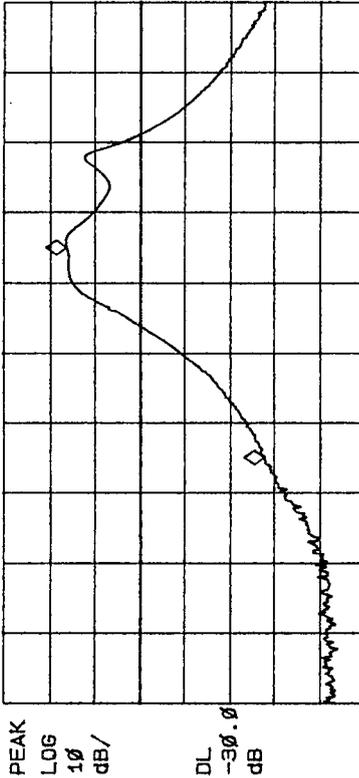
Same as A

Same as A

699.999 MHz FM
D/A = 170 (TUNE)

13:03:58 SEP 11, 1997

BAND14 TUNE-BPF FRONT7-B MKR 700 MHz
REF .0 dBm AT 10 dB



| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|---------|------|-----------|
| 1: | (A) | 400 MHz | | -27.84dB |
| 2: | (A) | 700 MHz | | 16.17dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

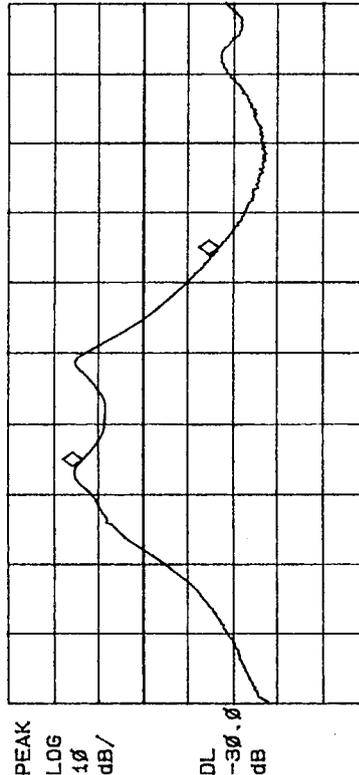
CENTER 550 MHz SPAN 1.000 GHz
#RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

1. IN

2. OUT

13:13:36 SEP 11, 1997

BAND15 TUNE-BPF FRONT7-C MKR 700 MHz
REF .0 dBm AT 10 dB



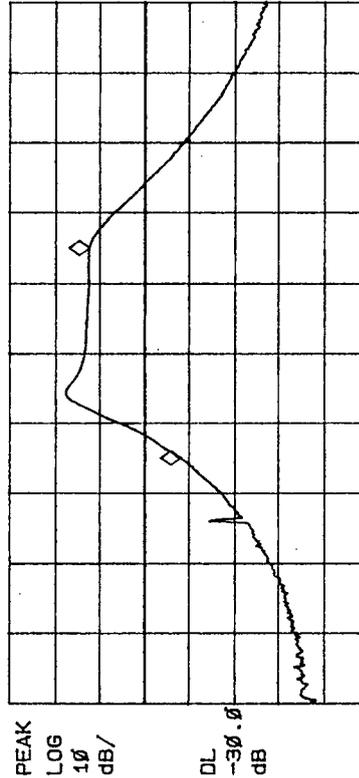
| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|----------|------|-----------|
| 1: | (A) | 700 MHz | | 13.41dB |
| 2: | (A) | 1000 MHz | | -17.06dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 850 MHz SPAN 1.000 GHz
#RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

1. IN
Same as A
2. OUT
same as A
700.000 MHz FM
D/A = 71 (TUNE)

13:11:09 SEP 11, 1997

BAND15 TUNE-BPF FRONT7-D MKR 1.000 GHz
REF .0 dBm AT 10 dB



| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|----------|------|-----------|
| 1: | (A) | 700 MHz | | -8.20dB |
| 2: | (A) | 1000 MHz | | 12.23dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 850 MHz SPAN 1.000 GHz
#RES BW 1.0 MHz VBW 300 kHz SWP 20.0 msec

1. IN

2. OUT

Same as A

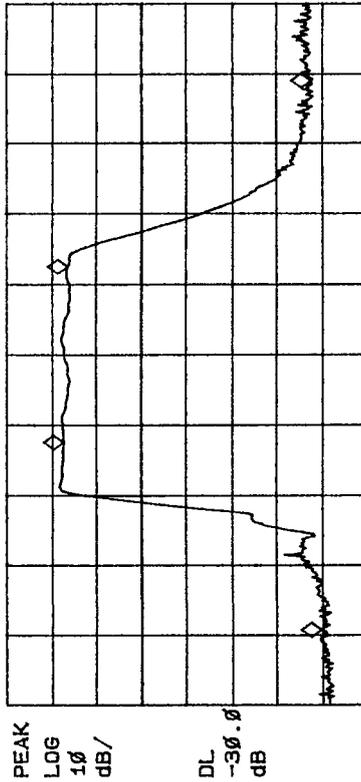
Same as A

999.999 MHz FM
D/A = 165 (TUNE)

13: 44: 37 SEP 11, 1997
BAND16 BPE

FRONT 8 - A MKR 1.600 GHz
AT 10 dB

REF -0.0 dBm



1. IN
 ① ANTI
 ② LEVEL -30dBm
 2. OUT
 ① R297 OPEN
 ② R297 → C288
 ③ DC

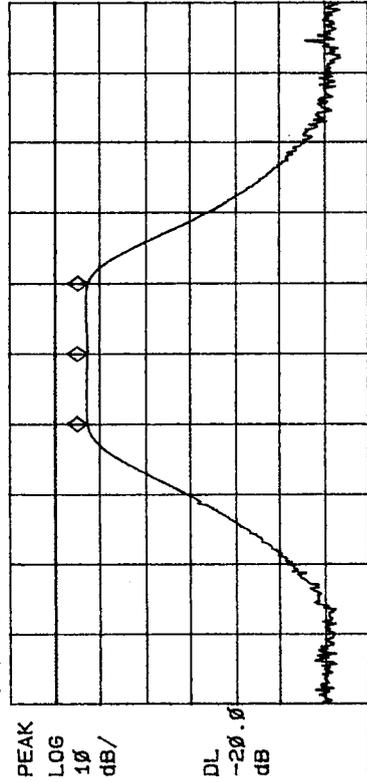
| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|----------|------|-----------|
| 1: | (A) Freq | 358 MHz | | -39.99dBm |
| 2: | (A) Freq | 1000 MHz | | 17.20dBm |
| 3: | (A) Freq | 1600 MHz | | 16.20dBm |
| 4: | (A) Freq | 2236 MHz | | -37.79dBm |

START 1000 MHz #RES BW 1.0 MHz VBW 300 kHz SWP 48.0 msec STOP 2.500 GHz

14: 16: 31 SEP 11, 1997
FIRST IF FILTER

FRONT 8 - C MKR 622.40 MHz
AT 10 dB

REF -10.0 dBm



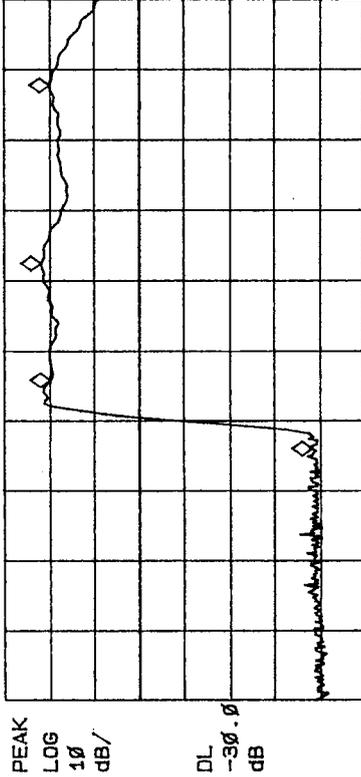
| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|------------|------|-----------|
| 1: | (A) Freq | 617.40 MHz | | -7.30dBm |
| 2: | (A) Freq | 622.40 MHz | | -7.32dBm |
| 3: | (A) Freq | 627.40 MHz | | -7.42dBm |
| 4: | Inactive | | | |

CENTER 622.40 MHz #RES BW 100 kHz VBW 30 kHz SWP 50.0 msec STOP 50.00 MHz

13: 52: 16 SEP 11, 1997
BAND17 BPF

FRONT 8 - B MKR 2.606 GHz
AT 10 dB

REF -0.0 dBm



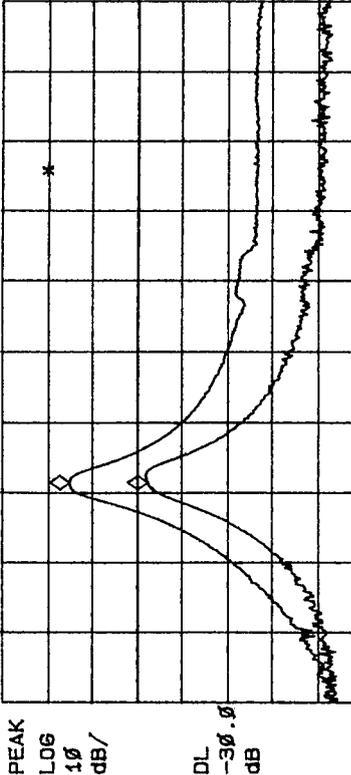
1. IN
 same as A
 2. OUT
 same as A
 1600.000 MHz FM

| Marker | Trace Type | Freq | Time | Amplitude |
|--------|------------|----------|------|-----------|
| 1: | (A) Freq | 1364 MHz | | -38.43dBm |
| 2: | (A) Freq | 1598 MHz | | 19.68dBm |
| 3: | (A) Freq | 2000 MHz | | 21.75dBm |
| 4: | (A) Freq | 2606 MHz | | 19.81dBm |

START 500 MHz #RES BW 1.0 MHz VBW 300 kHz SWP 48.0 msec STOP 2.900 GHz

14:39:51 SEP 11, 1997
BAND11 TUNE-BPF

FRONT9 - A MKR 75.0 MHz
REF .0 dBm AT 10 dB



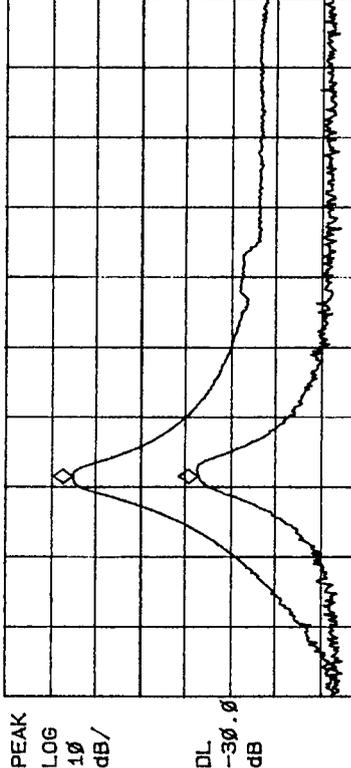
1. IN
① ANTI
② LEVEL
-30dBm
2. OUT
① R296 OPEN
② R296 → C139
③ DC
75.000 MHz FM
D/A = 52 (TUNE)

| Marker | Trace Type | Freq / Time | Amplitude | ATT |
|--------|------------|-------------|-----------|------|
| 1: | (A) | 75.0 MHz | 14.94dB | 0dB |
| 2: | (C) | 75.0 MHz | -2.45dB | 10dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 112.0 MHz
RES BW 1.0 MHz
SPAN 200.0 MHz
SMP 20.0 msec

14:42:16 SEP 11, 1997
BAND11 TUNE-BPF

FRONT9 - B MKR 75.0 MHz
REF .0 dBm AT 10 dB



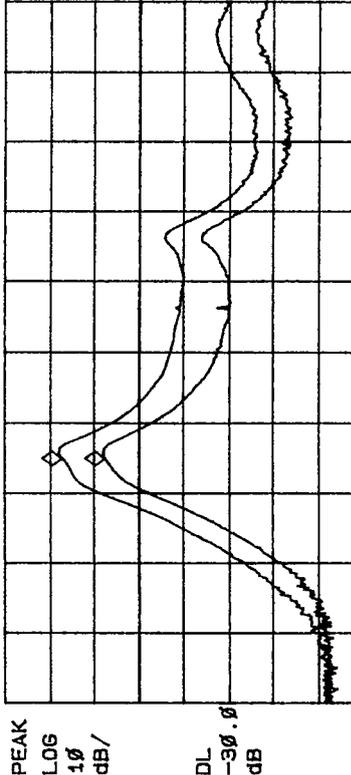
1. IN
Same as A
2. OUT
Same as A
75.000 MHz FM
D/A = 52 (TUNE)

| Marker | Trace Type | Freq / Time | Amplitude | ATT |
|--------|------------|-------------|-----------|------|
| 1: | (A) | 75.0 MHz | 14.94dB | 0dB |
| 2: | (C) | 75.0 MHz | -13.07dB | 20dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 112.0 MHz
RES BW 1.0 MHz
SPAN 200.0 MHz
SMP 20.0 msec

15:04:05 SEP 11, 1997
BAND14 TUNE-BPF

FRONT9 - C MKR 400 MHz
REF .0 dBm AT 10 dB



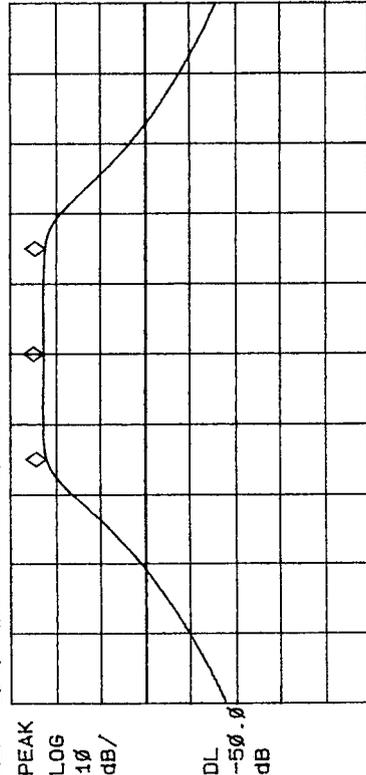
1. IN
Same as A
2. OUT
① R297 OPEN
② R297 → C288
③ DC
400.000 MHz FM
D/A = 22 (TUNE)

| Marker | Trace Type | Freq / Time | Amplitude | ATT |
|--------|------------|-------------|-----------|------|
| 1: | (A) | 400 MHz | 17.05dB | 0dB |
| 2: | (C) | 400 MHz | 7.46dB | 10dB |
| 3: | Inactive | | | |
| 4: | Inactive | | | |

CENTER 550 MHz
RES BW 1.0 MHz
SPAN 1.000 GHz
SMP 20.0 msec

16: 33: 37 SEP 11, 1997
 10.7MHz MCF BW=3KHz
 REF -20.0 dBm AT 10 dB

IF1 - A MKR 10.70000 MHz
 22.56 dB



1. IN
 ① J7
 ② LEVEL -50dBm
 ③ DC 2
 2. OUT
 ① IR OUT REAR PANEL

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|--------------|-----------|
| 1: | (A) Freq | 10.69850 MHz | 21.95dBm |
| 2: | (A) Freq | 10.70000 MHz | 22.56dBm |
| 3: | (A) Freq | 10.70150 MHz | 22.19dBm |
| 4: | Inactive | | |

CENTER 10.70000 MHz SPAN 10.00 kHz
 RES BW 100 Hz VBW 100 Hz SWP 3.00 sec

same as A

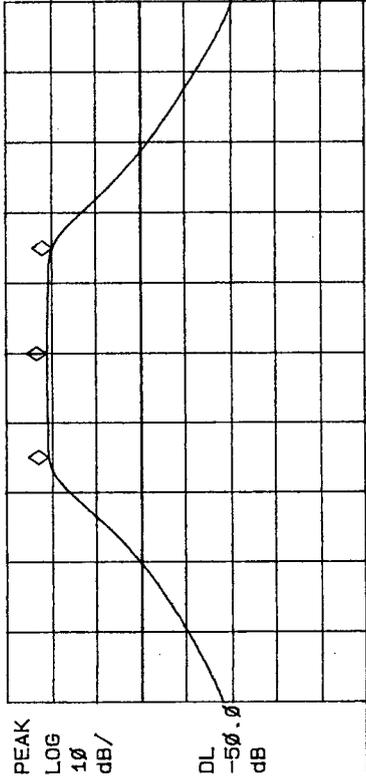
2. OUT

same as A

129.900MHz FM
 AGC = 0FH

16: 44: 54 SEP 11, 1997
 10.7MHz MCF BW=6KHz
 REF -20.0 dBm AT 10 dB

IF1 - B MKR 10.70000 MHz
 20.89 dB



1. IN

same as A

2. OUT

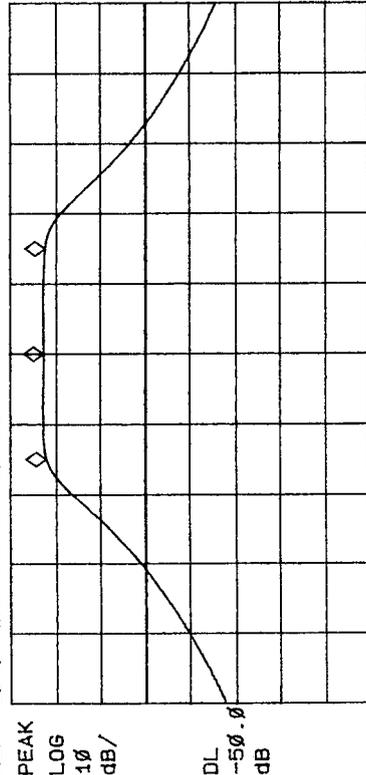
same as A

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|--------------|-----------|
| 1: | (A) Freq | 10.69700 MHz | 20.55dBm |
| 2: | (A) Freq | 10.70000 MHz | 20.89dBm |
| 3: | (A) Freq | 10.70300 MHz | 19.54dBm |
| 4: | Inactive | | |

CENTER 10.70000 MHz SPAN 20.00 kHz
 RES BW 300 Hz VBW 300 Hz SWP 1.00 sec

16: 54: 36 SEP 11, 1997
 10.7MHz MCF BW=15KHz
 REF -20.0 dBm AT 10 dB

IF1 - C MKR 10.70000 MHz
 19.91 dB



1. IN
 ① J7
 ② LEVEL -50dBm
 ③ DC 2
 2. OUT
 ① IR OUT REAR PANEL

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|--------------|-----------|
| 1: | (A) Freq | 10.69250 MHz | 19.91dBm |
| 2: | (A) Freq | 10.70000 MHz | 19.91dBm |
| 3: | (A) Freq | 10.70750 MHz | 20.05dBm |
| 4: | Inactive | | |

CENTER 10.70000 MHz SPAN 50.00 kHz
 RES BW 1.0 kHz VBW 1 kHz SWP 300 msec

same as A

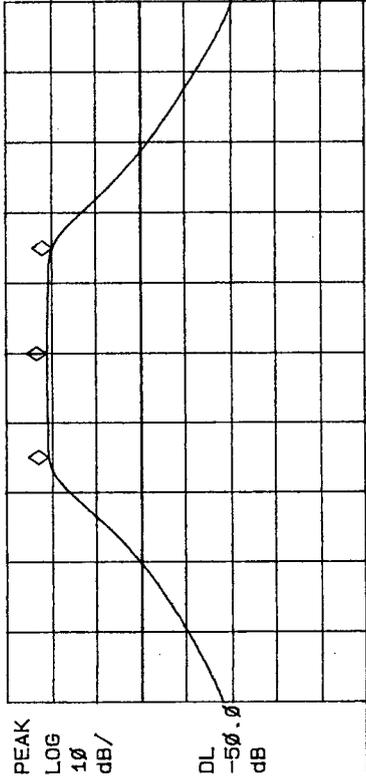
2. OUT

same as A

129.900MHz FM
 AGC = 0FH

16: 01: 24 SEP 11, 1997
 10.7MHz MCF BW=30KHz
 REF -20.0 dBm AT 10 dB

IF1 - D MKR 10.70000 MHz
 16.74 dB



1. IN

same as A

2. OUT

same as A

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|--------------|-----------|
| 1: | (A) Freq | 10.68500 MHz | 15.62dBm |
| 2: | (A) Freq | 10.70000 MHz | 16.74dBm |
| 3: | (A) Freq | 10.71500 MHz | 14.07dBm |
| 4: | Inactive | | |

CENTER 10.70000 MHz SPAN 100.0 kHz
 RES BW 1.0 kHz VBW 1 kHz SWP 300 msec

same as A

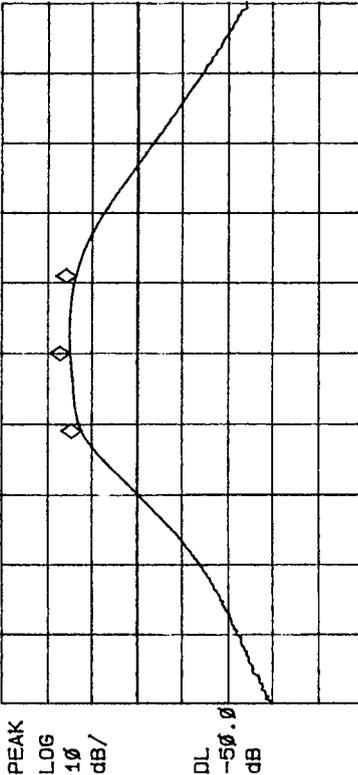
2. OUT

same as A

129.900MHz FM
 AGC = 0FH

16: 58: 48 SEP 11, 1997

10.7MHz MCF BW=110KHz IF2 - A MKR 10.7000 MHz
 REF -20.0 dBm AT 10 dB

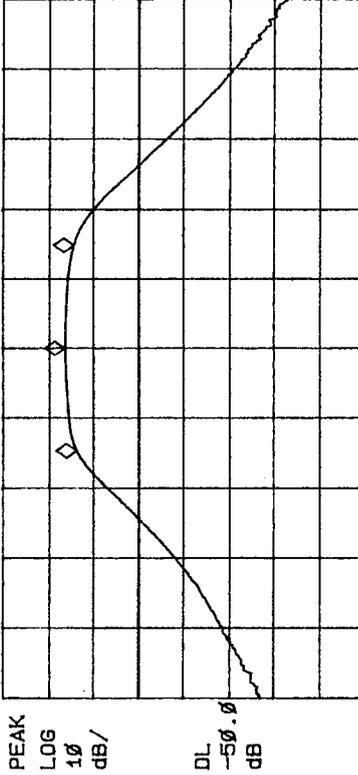


| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 10.6450 MHz | 12.27dBdL |
| 2: | (A) Freq | 10.7000 MHz | 14.80dBdL |
| 3: | (A) Freq | 10.7550 MHz | 13.46dBdL |
| 4: | Inactive | | |

CENTER 10.7000 MHz SPAN 500.0 KHz
 RES BW 10 KHz VBW 10 KHz SWP 30.0 msec

17: 02: 33 SEP 11, 1997

10.7MHz MCF BW=220KHz IF2 - B MKR 10.7000 MHz
 REF -20.0 dBm AT 10 dB

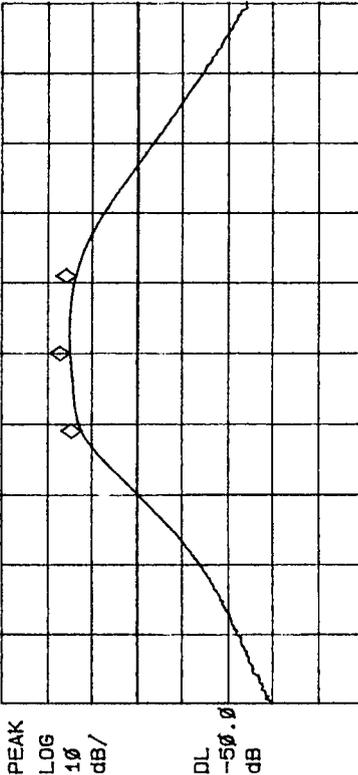


| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 10.5894 MHz | 13.72dBdL |
| 2: | (A) Freq | 10.7000 MHz | 16.25dBdL |
| 3: | (A) Freq | 10.8106 MHz | 14.28dBdL |
| 4: | Inactive | | |

CENTER 10.7000 MHz SPAN 750.0 KHz
 RES BW 10 KHz VBW 10 KHz SWP 30.0 msec

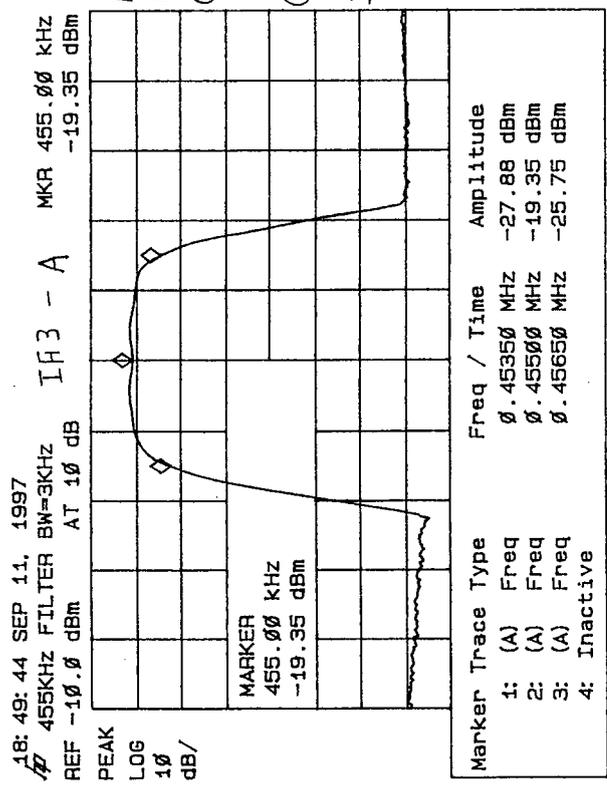
18: 01: 50 SEP 13, 1997

10.7MHz EXT IF2 - C MKR 10.7000 MHz
 REF -20.0 dBm AT 10 dB

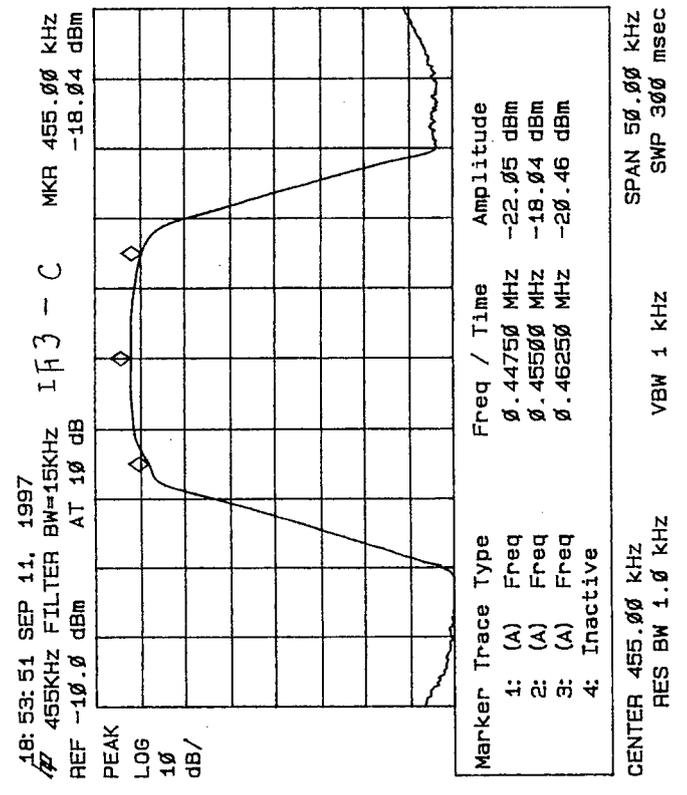


| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|-----------|
| 1: | (A) Freq | 5.70 MHz | 6.90dBdL |
| 2: | (A) Freq | 10.70 MHz | 8.14dBdL |
| 3: | (A) Freq | 15.70 MHz | 6.71dBdL |
| 4: | Inactive | | |

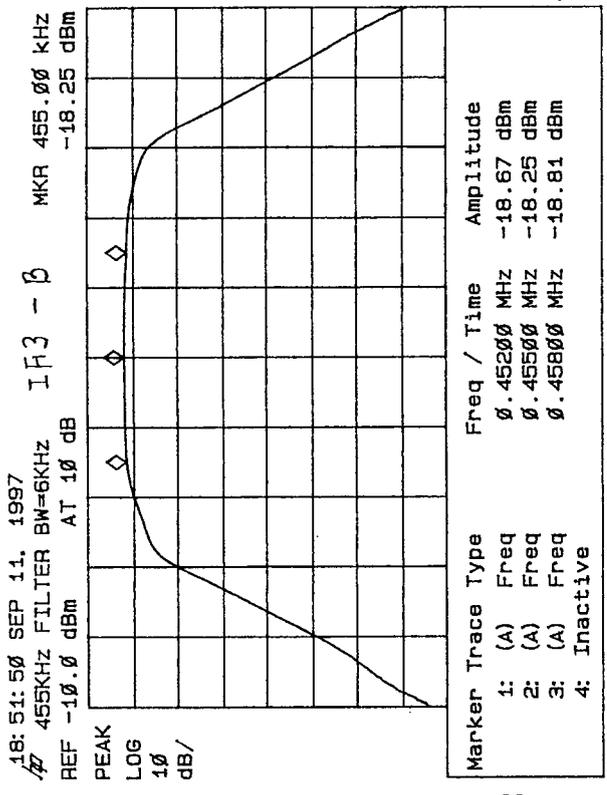
CENTER 10.7000 MHz SPAN 200.0 KHz
 RES BW 100 KHz VBW 30 KHz SWP 20.0 msec



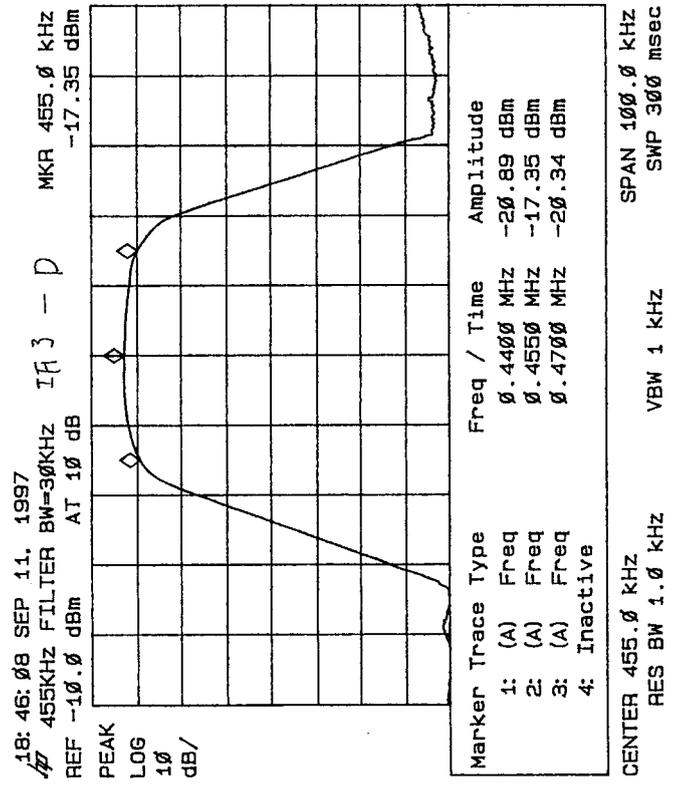
1. IN
 ① TPG
 ② LEVEL
 0 dBm
 ③ DC
 2. OUT
 ① VRI-3
 ② DC
 129.700MHz FM
 AGC=0FH



1. IN
 same as A
 2. OUT
 same as A
 129.700MHz FM
 AGC=0FH



1. IN
 same as A
 2. OUT
 same as A
 129.700MHz FM
 AGC=0FH

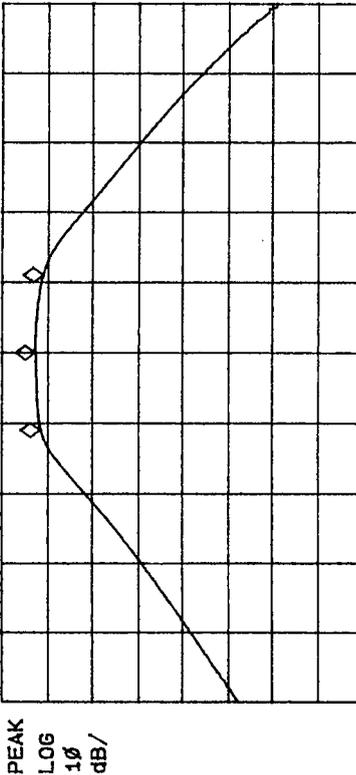


1. IN
 same as A
 2. OUT
 same as A
 129.700MHz FM
 AGC=0FH

18: 57: 35 SEP 11, 1997

455KHz FILTER BW=110KHz I R 4 - A
REF -10.0 dBm AT 10 dB

MKR 455.0 KHz
-17.47 dBm



1. IN
 ① TPG
 ② LEVEL 0dBm
 ③ PC
 2. OUT
 ① VRI-3
 ② PC

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 0.4000 MHz | -18.65 dBm |
| 2: | (A) Freq | 0.4550 MHz | -17.47 dBm |
| 3: | (A) Freq | 0.5100 MHz | -19.21 dBm |
| 4: | Inactive | | |

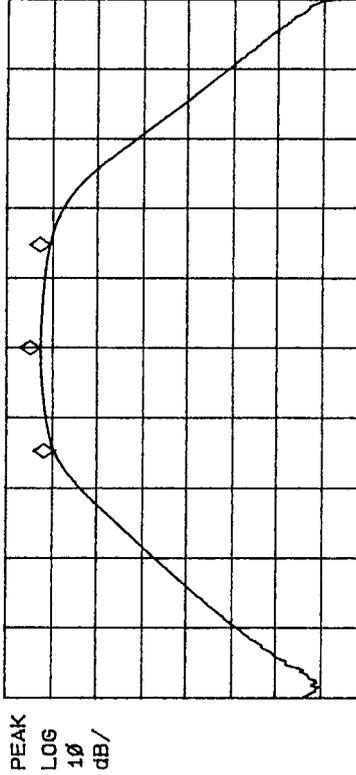
CENTER 455.0 KHz
 RES BW 10 KHz
 VBM 10 KHz
 SPAN 500.0 KHz
 SWP 30.0 msec

129.900 MHz FM
 AGC = 0 FA

19: 00: 12 SEP 11, 1997

455KHz FILTER BW=220KHz I R 4 - B
REF -10.0 dBm AT 10 dB

MKR 455.0 KHz
-17.54 dBm



1. IN
 same as A
 2. OUT
 same as A

| Marker | Trace Type | Freq / Time | Amplitude |
|--------|------------|-------------|------------|
| 1: | (A) Freq | 0.3444 MHz | -20.63 dBm |
| 2: | (A) Freq | 0.4550 MHz | -17.54 dBm |
| 3: | (A) Freq | 0.5656 MHz | -19.69 dBm |
| 4: | Inactive | | |

CENTER 455.0 KHz
 RES BW 10 KHz
 VBM 10 KHz
 SPAN 750.0 KHz
 SWP 30.0 msec

129.900 MHz FM
 AGC = 0 FA

FRONT-RF UNIT

| Part | Used | PartType | Designators |
|------|------|----------|-------------|
|------|------|----------|-------------|

| | | | |
|----|----|------------------|--|
| 1 | 1 | 0.5pF (Cer) | C288 |
| 2 | 3 | 1pF (Cer) | C82 C89 C413 |
| 3 | 1 | 2pF (Cer) | C121 |
| 4 | 1 | 3pF (Cer) | C410 |
| 5 | 2 | 4pF (Cer) | C52 C367 |
| 6 | 2 | 5pF (Cer) | C141 C142 |
| 7 | 2 | 6pF (Cer) | C85 C144 |
| 8 | 1 | 7pF (Cer) | C47 |
| 9 | 4 | 10pF (Cer) | C294 C295 C303 C369 |
| 10 | 1 | 20pF (CV05D2001) | TC1 |
| 11 | 1 | 22pF (Cer) | C114 |
| 12 | 3 | 33pF (Cer) | C102 C117 C135 |
| 13 | 1 | 39pF (Cer) | C205 |
| 14 | 1 | 43pF (Cer) | C97 |
| 15 | 1 | 47pF (Cer) | C134 |
| 16 | 14 | 100pF(Cer) | C45 C68 C70 C71 C74 C75 C79 C94 C137 C139 C261 C262 C263 C264 |
| 17 | 2 | 150pF(Cer) | C107 C191 |
| 18 | 1 | 270pF(Cer) | C368 |
| 19 | 39 | 330pF(Cer) | C46 C48 C49 C50 C51 C53 C54 C55 C56 C57 C58 C59 C62 C63 C65 C69 C72 C73 C78 C81 C83 C87 C90 C122 C131 C302 C309 C310 C372 C377 C384 C386 C388 C392 C393 C394 C395 C396 C397 |
| 20 | 1 | 470pF(Cer) | C186 |
| 21 | 13 | 1nF (Cer) | C64 C77 C84 C88 C95 C96 C100 C138 C140 C145 C290 C349 C373 |
| 22 | 2 | 4.7nF (Cer) | C234 C237 |
| 23 | 51 | 10nF (Cer) | C2 C5 C8 C20 C67 C104 C105 C108 C109 C111 C115 C118 C119 C128 C130 C132 C136 C146 C155 C156 C157 C158 C159 C160 C161 C163 C164 C166 C217 C219 C221 C223 C225 C227 C265 C267 C268 C269 C270 C277 C304 C362 C363 C364 C365 C376 C385 C389 C390 C398 C399 |
| 24 | 2 | 12nF (Cer) | C235 C236 |
| 25 | 22 | 0.1uF(Cer) | C143 C162 C165 C167 C168 C169 C170 C171 C172 C173 C174 C175 C176 C177 C178 C179 C180 C181 C182 C183 C184 C378 |
| 26 | 4 | 1uF (Cer) | C185 C188 C189 C192 |
| 27 | 41 | 2.2uF(Cer) | C187 C190 C202 C203 C204 C206 C207 C208 C209 C210 C211 C212 C213 C229 C230 C231 C232 C233 C238 C239 C240 C241 C242 C257 C258 C259 C260 C275 C276 C305 C306 C307 C308 C379 C380 C381 C382 C383 C391 C400 C401 |
| 28 | 1 | 100uF/16V (Ele) | C412 |
| 29 | 1 | 100uF/35V (Ele) | C272 |
| 30 | 2 | 220uF/6.3V(Ele) | C271 C274 |
| 31 | 1 | 220uF/16V (Ele) | C273 |
| 32 | 4 | 0 | R296 R297 R351 R352 |
| 33 | 7 | 10 | R55 R71 R136 R143 R231 R240 R358 |
| 34 | 1 | 15 | R142 |
| 35 | 6 | 22 | R135 R230 R313 R315 R354 R242 |
| 36 | 4 | 27 | R309 R310 R340 R342 |
| 37 | 3 | 36 | R308 R314 R341 |
| 38 | 5 | 47 | R4 R5 R10 R11 R58 |
| 39 | 4 | 100 | R68 R69 R74 R75 |

| | | | |
|----|----|--------------------|--|
| 40 | 7 | 220 | R155 R165 R176 R186 R196 R206 R259 |
| 41 | 1 | 330 | R311 |
| 42 | 1 | 430 | R238 |
| 43 | 6 | 470 | R132 R224 R343 R344 R361 R362 |
| 44 | 2 | 560 | R232 R233 |
| 45 | 3 | 680 | R133 R140 R228 |
| 46 | 42 | 1K | R32 R40 R50 R51 R57 R60 R61 R70 R78 R79 R89 R96 R107 R108 R115 R120 R130 R137 R139 R144 R162 R174 R184 R194 R204 R213 R226 R234 R235 R243 R261 R304 R306 R307 R312 R316 R317 R339 R353 R355 R357 R363 |
| 47 | 1 | 1K(Axi) | R376 |
| 48 | 1 | 1.5K | R239 |
| 49 | 3 | 2.2K | R62 R77 R289 |
| 50 | 3 | 2.7K | R134 R141 R229 |
| 51 | 1 | 3.3K | R290 |
| 52 | 2 | 4.7K | R291 R292 |
| 53 | 1 | 8.2K | R288 |
| 54 | 25 | 10K | R54 R56 R208 R209 R211 R212 R278 R279 R280 R293 R295 R345 R346 R347 R348 R349 R350 R364 R365 R366 R367 R368 R369 R371 R373 |
| 55 | 1 | 10K(RH0421C14J10K) | VR3 |
| 56 | 1 | 15K | R294 |
| 57 | 4 | 22K | R181 R191 R201 R210 |
| 58 | 2 | 39K | R66 R72 |
| 59 | 8 | 47K | R48 R49 R95 R102 R119 R126 R159 R170 |
| 60 | 35 | 100K | R34 R37 R42 R47 R65 R67 R73 R76 R88 R90 R94 R98 R100 R109 R117 R122 R129 R167 R173 R178 R179 R180 R182 R183 R188 R189 R190 R192 R193 R198 R199 R200 R202 R203 R281 |
| 61 | 32 | 220K | R35 R36 R38 R39 R43 R44 R45 R46 R87 R91 R92 R93 R103 R104 R105 R106 R110 R111 R113 R114 R123 R124 R127 R128 R157 R158 R160 R161 R168 R169 R171 R172 |
| 62 | 37 | 470K | R33 R41 R59 R63 R81 R82 R86 R97 R101 R116 R118 R121 R131 R138 R145 R156 R164 R166 R175 R177 R185 R187 R195 R197 R205 R207 R214 R227 R236 R244 R245 R260 R262 R359 R370 R372 R374 |
| 63 | 1 | RKM10L203G | RN2 |
| 64 | 2 | 2d3t | L63 L150 |
| 65 | 1 | 2d4t | L65 |
| 66 | 3 | 2d5t | L29 L119 L120 |
| 67 | 2 | 2.5d2t | L23 L24 |
| 68 | 2 | 4d3t | L41 L42 |
| 69 | 2 | 4d5t | L45 L46 |
| 70 | 2 | 5d0.5t | L20 L21 |
| 71 | 1 | 10nH | L28 |
| 72 | 1 | 12nH | L165 |
| 73 | 1 | 15nH | L33 |
| 74 | 1 | 17nH | L35 |
| 75 | 2 | 23nH | L32 L34 |
| 76 | 1 | 47nH | L61 |
| 77 | 2 | 560nH | L64 L92 |
| 78 | 1 | 3.9uH | L82 |
| 79 | 3 | 10uH | L30 L31 L157 |
| 80 | 1 | 27uH | L98 |
| 81 | 1 | 33uH | L99 |
| 82 | 1 | 39uH | L100 |

| | | | |
|-----|----|--------------|--|
| 83 | 1 | 220uH(Rad) | L111 |
| 84 | 17 | 330uH | L39 L44 L47 L48 L52 L53 L58 L62 L66 L71 L72 L89 L151 L152 L156 L163 L164 L73 L74 L75 L76 L77 L78 L79 L80 L81 L83 |
| 85 | 10 | 470uH | L88 L90 L93 L94 L95 L97 L101 L153 L91 L121 L122 L123 |
| 86 | 8 | 560uH | L19 L22 L25 L26 L36 L37 L102 L103 L104 L105 L106 L108 L109 L110 L159 L161 L162 L154 |
| 87 | 4 | 2.2mH | D1 D3 D5 D6 D49 D53 D238 D241 D242 D275 |
| 88 | 18 | BLM21A121 | D106 D118 D138 D152 D167 D182 D239 D263 |
| 89 | 10 | 1S2837 | D46 D47 D74 D84 D102 D104 D117 D151 D166 D181 D200 D230 D231 D232 D240 D243 D246 D247 D259 D280 |
| 90 | 8 | 1SS244 | D21 D30 D103 D233 D260 D277 D289 D50 D51 D52 D54 D56 D65 D75 D85 D252 D261 D262 D266 D267 D276 D278 |
| 91 | 20 | 1SS269 | D139 D140 D141 D142 D143 D144 D146 D147 D148 D149 D150 D153 D154 D155 D156 D157 D158 D159 D161 D162 D163 D164 D165 D168 D169 D170 D171 D172 D173 D174 D175 D176 D177 D178 D179 D180 D183 D184 D185 D186 D187 D188 D189 D191 D195 D197 D199 D256 D257 D258 D290 |
| 92 | 7 | RN731V | D31 D32 D33 D34 D42 D43 D45 D57 D58 D59 D60 D61 D62 D63 D64 D283 D284 D297 D298 |
| 93 | 15 | 1SV196 | D22 D23 D24 D25 D26 D27 D28 D29 D35 D37 D41 D44 D286 D287 |
| 94 | 51 | 1SV102 | D66 D67 D68 D69 D70 D71 D72 D73 D76 D77 D78 D79 D80 D81 D82 D83 D86 D88 D90 D92 D93 D95 D96 D97 D98 D99 D100 D101 D107 D108 D109 D110 D111 D112 D113 D114 D115 D116 D119 D120 D121 D122 D123 D124 D125 D126 D127 D128 D129 D130 D131 D132 D133 D134 D135 D136 D137 D264 D265 D281 D282 D291 D292 D293 D294 D295 D296 |
| 95 | 19 | HVU202A | Q22 |
| 96 | 14 | 1SV214 | Q24 Q42 Q45 |
| 97 | 8 | 1SV229 | Q13 Q14 |
| 98 | 59 | HVU300A | Q10 |
| 99 | 1 | 2SC3357 | Q5 Q6 Q7 Q8 Q11 Q12 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q23 Q25 Q27 Q28 Q29 Q30 Q31 Q32 Q33 Q34 Q35 Q36 Q37 Q38 Q41 Q43 Q44 Q46 Q47 Q48 Q50 Q51 Q52 Q53 |
| 100 | 3 | 2SC4536 | IC3 IC4 IC6 IC7 IC10 IC11 IC13 IC14 IC15 IC16 IC17 IC18 IC19 IC20 IC24 IC25 IC26 IC27 IC28 IC29 IC32 IC33 IC37 IC38 IC39 IC40 IC52 IC53 IC59 IC60 IC61 |
| 101 | 2 | 3SK232 | IC56 |
| 102 | 1 | FSX027WF | IC41 IC42 IC43 IC44 IC45 IC46 |
| 103 | 37 | DTC124EK | IC57 |
| 104 | 31 | FMC5 | IC58 |
| 105 | 1 | uPD74HC4051G | T4 |
| 106 | 6 | uPD4094BG | T5 |
| 107 | 1 | NIS-164 | T6 |
| 108 | 1 | NIS-165 | T7 |
| 109 | 1 | KE-07645 | |
| 110 | 1 | KE-07646 | |
| 111 | 1 | KE-07647 | |
| 112 | 1 | KE-07648 | |

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|-----|---|-------------|----------------|
| 113 | 1 | KE-07649 | T8 |
| 114 | 1 | KE-07780 | T12 |
| 115 | 2 | KE-07790 | T2 T3 |
| 116 | 1 | KE-07793 | T10 |
| 117 | 1 | KE-07804 | T11 |
| 118 | 2 | NIS-501 | DBM1 DBM3 |
| 119 | 1 | NIS-502 | DBM2 |
| 120 | 5 | RK1-9V | K1 K2 K5 K6 K7 |
| 121 | 1 | (M-TYPE) | ANT2 |
| 122 | 1 | (N-TYPE) | ANT1 |
| 123 | 1 | MM3325-2505 | J6 |
| 124 | 1 | PI22A06M | J4 |
| 125 | 1 | PI28A02M | J5 |
| 126 | 1 | PI28A08M | J3 |
| 127 | 2 | TMP-J01X-V6 | J1 J2 |
| 128 | 1 | JP-No.109 | JP1 |

CPU UNIT

Part Used PartType Designators

| Part | Used | PartType | Designators |
|------|------|-----------------|---|
| 1 | 1 | 10pF(Cer) | C65 |
| 2 | 1 | 20pF(Cer) | C23 |
| 3 | 1 | 20pF(CV05D2001) | TC1 |
| 4 | 2 | 33pF(Cer) | C22 C24 |
| 5 | 34 | 101 (Cer) | C6 C7 C15 C16 C17 C18 C19 C20 C21 C26 C27 C28 C29 C33 C34 C35 C36 C37 C38 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C53 C54 C64 C77 C80 |
| 6 | 24 | 102 (Cer) | C1 C2 C3 C4 C5 C8 C9 C10 C11 C12 C13 C14 C30 C31 C32 C39 C50 C51 C52 C58 C63 C67 C70 C78 |
| 7 | 6 | 0.1uF(Cer) | C59 C60 C61 C62 C69 C71 |
| 8 | 4 | 100uF/10V (Ele) | C73 C74 C75 C79 |
| 9 | 1 | 470uF/6.3V(Ele) | C72 |
| 10 | 1 | 10 | R20 |
| 11 | 1 | 1K | R10 |
| 12 | 4 | 33K | R70 R71 R72 R73 |
| 13 | 19 | 100K | R4 R9 R13 R14 R15 R16 R17 R18 R19 R56 R57 R59 R60 R61 R62 R63 R64 R65 R69 |
| 14 | 8 | 220K | R1 R2 R3 R5 R6 R7 R8 R12 |
| 15 | 1 | 560K | R58 |
| 16 | 55 | BLM21A121 | L5 L6 L7 L8 L9 L10 L11 L12 L14 L15 L16 L17 L18 L19 L20 L21 L22 L23 L24 L25 L26 L27 L28 L29 L30 L31 L32 L33 L34 L35 L36 L37 L38 L39 L40 L41 L42 L43 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60 L61 L62 L63 |
| 17 | 3 | HN2D01F | D1 D2 D5 |
| 18 | 2 | RB500V-40 | D3 D4 |
| 19 | 1 | DTC323TK | Q1 |
| 20 | 1 | S-8052HNM | IC1 |
| 21 | 1 | TC4W66F | IC2 |
| 22 | 1 | uPD74HC373GS | IC5 |
| 23 | 1 | uPD78P064GF | IC3 |
| 24 | 1 | uPD16430AGF | IC4 |
| 25 | 1 | 32.768Kz | X1 |
| 26 | 1 | 4.9152MHz | X2 |
| 27 | 1 | D2213 | BL1 |
| 28 | 1 | DLC-3069PYNGF | LCD1 |
| 29 | 25 | SKHHBV | S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 S18 S19 S20 S21 S22 S23 S24 S25 S26 |
| 30 | 1 | SKHHBY | S1 |
| 31 | 1 | SKHLAC | S27 |
| 32 | 1 | PI28A02M | J8 |
| 33 | 1 | PI28A05M | J3 |
| 34 | 1 | PI28A06M | J2 |
| 35 | 1 | PI28A09M | J5 |
| 36 | 1 | PI28A10M | J6 |
| 37 | 1 | PI28A11M | J4 |
| 38 | 1 | PI28A13M | J1 |
| 39 | 1 | PI28G15M | J7 |
| 40 | 1 | JP-No.101 | JP1 |
| 41 | 1 | JP-No.102 | JP2 |
| 42 | 1 | JP-No.103 | JP3 |

PLL UNIT

| Part | Used | PartType | Designators |
|------|------|------------------|--|
| 1 | 2 | 0.5pF(Cer) | C111 C173 |
| 2 | 5 | 1.5pF(Cer) | C100 C110 C131 C132 C150 |
| 3 | 6 | 1pF (Cer) | C92 C93 C94 C105 C108 C141 |
| 4 | 5 | 2pF (Cer) | C103 C109 C112 C117 C135 |
| 5 | 5 | 3pF (Cer) | C104 C133 C138 C140 C172 |
| 6 | 8 | 4pF (Cer) | C75 C86 C113 C115 C120 C124 C139 C145 |
| 7 | 5 | 5pF (Cer) | C72 C83 C107 C114 C137 |
| 8 | 5 | 6pF (Cer) | C121 C122 C123 C146 C148 |
| 9 | 2 | 7pF (Cer) | C102 C136 |
| 10 | 4 | 8pF (Cer) | C74 C84 C85 C147 |
| 11 | 1 | 9pF (Cer) | C73 |
| 12 | 3 | 10pF (Cer) | C71 C76 C134 |
| 13 | 3 | 20pF (Cer) | C99 C187 C193 |
| 14 | 2 | 47pF (Cer) | C234 C235 |
| 15 | 1 | 68pF (Cer) | C218 |
| 16 | 40 | 100pF(Cer) | C1 C2 C4 C5 C6 C7 C8 C11 C12 C14 C26 C45 C52 C53 C54 C64 C65 C79 C80 C91 C95 C96 C97 C98 C116 C118 C125 C128 C129 C130 C143 C144 C149 C151 C152 C155 C176 C180 C181 C209 |
| 17 | 1 | 150pF(Cer) | C200 |
| 18 | 1 | 270pF(Cer) | C201 |
| 19 | 31 | 330pF(Cer) | C13 C77 C78 C81 C101 C106 C119 C126 C127 C142 C153 C154 C156 C157 C158 C159 C160 C161 C162 C163 C164 C165 C166 C167 C168 C169 C170 C171 C238 C239 C240 |
| 20 | 3 | 470pF(Cer) | C207 C230 C231 |
| 21 | 6 | 1nF (Cer) | C44 C82 C206 C229 C236 C237 |
| 22 | 2 | 2.2nF (Cer) | C203 C204 |
| 23 | 1 | 3.3nF (Cer) | C205 |
| 24 | 29 | 10nF (Cer) | C10 C30 C35 C37 C40 C41 C42 C43 C56 C58 C61 C62 C63 C89 C90 C194 C195 C197 C198 C199 C208 C223 C224 C225 C226 C227 C228 C232 C233 |
| 25 | 18 | 0.1uF(Cer) | C9 C32 C34 C50 C60 C69 C88 C182 C183 C184 C185 C188 C189 C190 C191 C192 C196 C221 |
| 26 | 1 | 0.1uF/35V (Tan) | C215 |
| 27 | 6 | 1uF/16V (Tan) | C25 C46 C47 C48 C49 C179 |
| 28 | 4 | 2.2uF/6.3V (Tan) | C16 C17 C177 C213 |
| 29 | 8 | 2.2uF/16V (Tan) | C15 C18 C19 C22 C23 C24 C38 C211 |
| 30 | 3 | 2.2uF/35V (Tan) | C28 C29 C55 |
| 31 | 1 | 10uF/16V (Ele) | C210 |
| 32 | 1 | 100uF/6.3V(Ele) | C214 |
| 33 | 4 | 100uF/10V (Ele) | C21 C31 C33 C222 |
| 34 | 6 | 100uF/16V (Ele) | C20 C51 C59 C70 C87 C212 |
| 35 | 1 | 100uF/35V (Ele) | C27 |
| 36 | 2 | 220uF/10V (Ele) | C67 C68 |
| 37 | 1 | 220uF/16V (Ele) | C66 |
| 38 | 1 | 0 | R111 |
| 39 | 6 | 3.3 | R14 R16 R51 R52 R54 R55 |
| 40 | 4 | 10 | R47 R62 R64 R82 |
| 41 | 4 | 22 | R13 R50 R59 R60 |
| 42 | 2 | 39 | R118 R119 |
| 43 | 5 | 47 | R49 R65 R66 R72 R80 |
| 44 | 2 | 68 | R53 R57 |
| 45 | 3 | 100 | R58 R122 R139 |
| 46 | 1 | 150 | R63 |

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| 47 | 4 | 220 | R1 R101 R105 R145 |
| 48 | 5 | 470 | R15 R48 R56 R102 R117 |
| 49 | 1 | 560 | R133 |
| 50 | 36 | 1K | R4 R5 R17 R18 R19 R20 R24 R25 R27 R28 R32 R34 R35 R36 R37 R38 R39 R40 R61 R67 R68 R69 R70 R71 R73 R74 R81 R83 R84 R85 R96 R97 R107 R126 R127 R130 |
| 51 | 6 | 2.2K | R2 R3 R6 R12 R98 R116 |
| 52 | 2 | 2.7K | R114 R115 |
| 53 | 2 | 3.3K | R108 R125 |
| 54 | 3 | 4.7K | R23 R26 R146 |
| 55 | 1 | 5.6K | R112 |
| 56 | 20 | 10K | R7 R22 R29 R45 R93 R95 R103 R104 R106 R110 R135 R136 R137 R138 R140 R141 R142 R143 R144 R147 |
| 57 | 2 | 12K | R8 R10 |
| 58 | 1 | 18K | R113 |
| 59 | 1 | 22K | R123 |
| 60 | 2 | 33K | R21 R30 |
| 61 | 6 | 47K | R41 R42 R43 R44 R99 R100 |
| 62 | 4 | 100K | R11 R31 R33 R148 |
| 63 | 8 | 220K | R46 R75 R76 R77 R78 R79 R128 R129 |
| 64 | 1 | 1M | R9 |
| 65 | 1 | 1d1t | L28 |
| 66 | 15 | 1d2t | L26 L27 L29 L30 L31 L32 L33 L35 L36 L44 L45 L47 L48 L49 L55 |
| 67 | 3 | 1d3t | L34 L38 L58 |
| 68 | 5 | 1.5d2t | L43 L46 L51 L52 L54 |
| 69 | 5 | 1.5d3t | L39 L40 L41 L42 L50 |
| 70 | 2 | 8.8nH | L20 L53 |
| 71 | 8 | 15nH | L9 L15 L16 L17 L18 L19 L25 L37 |
| 72 | 2 | 680nH | L67 L68 |
| 73 | 1 | 3.3uH | L69 |
| 74 | 2 | 5.6uH | L65 L66 |
| 75 | 2 | 10uH | L60 L61 |
| 76 | 3 | 100uH | L59 L63 L64 |
| 77 | 1 | 470uH | L62 |
| 78 | 16 | BLM21A121 | L1 L2 L3 L4 L5 L6 L7 L8 L10 L11 L12 L13 L14 L22 L23 L24 |
| 79 | 1 | 1S2837 | D19 |
| 80 | 1 | HVU300A | D23 |
| 81 | 7 | 1SV196 | D1 D2 D3 D4 D20 D24 D25 |
| 82 | 1 | RD5.6MB2 | D9 |
| 83 | 3 | RD8.2MB2 | D5 D8 D22 |
| 84 | 9 | RN731V | D10 D11 D12 D13 D14 D15 D16 D17 D18 |
| 85 | 3 | HN2D01F | D6 D7 D21 |
| 86 | 2 | 2SA812 | Q3 Q7 |
| 87 | 2 | 2SC1009A | Q36 Q39 |
| 88 | 18 | 2SC1623 | Q1 Q2 Q4 Q5 Q6 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q22 Q34 Q35 |
| 89 | 1 | 2SC2759 | Q44 |
| 90 | 1 | 2SC3356 | Q38 |
| 91 | 8 | DTC124EK | Q28 Q29 Q30 Q31 Q32 Q37 Q41 Q42 |
| 92 | 1 | DTC323TK | Q43 |
| 93 | 11 | FMC5 | Q18 Q19 Q20 Q21 Q23 Q24 Q25 Q26 Q27 Q33 Q40 |
| 94 | 1 | MB1501PF | IC1 |
| 95 | 2 | MB1504PF | IC3 IC17 |
| 96 | 1 | S-80840ANUP | IC16 |
| 97 | 1 | TC4S81F | IC2 |
| 98 | 2 | uPC1675G | IC7 IC10 |
| 99 | 1 | uPC1676G | IC8 |
| 100 | 6 | uPC2709T | IC6 IC9 IC11 IC12 IC13 IC14 |

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| 101 | 1 | uPD4017BG | IC18 |
| 102 | 2 | uPD4094BG | IC4 IC5 |
| 103 | 1 | NIS-501 | DBM1 |
| 104 | 1 | NIS-503 | FDB1 |
| 105 | 1 | NIS-504 | VCO4 |
| 106 | 1 | NIS-507 | TCXO1 |
| 107 | 1 | NIS-150 | NCO1 |
| 108 | 1 | CSA4.60MG040 | CX1 |
| 109 | 2 | KE-07495 | T1 T2 |
| 110 | 1 | KE-07631 | T3 |
| 111 | 1 | PI22A07M | J6 |
| 112 | 1 | PI28A08M | J7 |
| 113 | 1 | PI28A09M | J5 |
| 114 | 1 | PI28A10M | J8 |
| 115 | 1 | PI28A09F | F1 |
| 116 | 1 | MM3325-2505 | J1 |
| 117 | 3 | TMP-J01X-V6 | J2 J3 J4 |
| 118 | 1 | JP-No.6 | JP1 |

NCO UNIT(NIS-150)

| Part | Used | PartType | Designators |
|------|------|-----------------------|----------------------|
| 1 | 1 | 20pF (TZBX4R200BA110) | C17 |
| 2 | 1 | 43pF(Cer) | C16 |
| 3 | 1 | 47pF(Cer) | C15 |
| 4 | 1 | 68pF (Cer Rad) | C18 |
| 5 | 1 | 120pF(Cer Rad) | C19 |
| 6 | 2 | 470pF(Cer) | C3 C4 |
| 7 | 1 | 560pF(Cer) | C2 |
| 8 | 1 | 680pF(Cer) | C1 |
| 9 | 4 | 10nF (Cer) | C7 C9 C12 C13 |
| 10 | 6 | 0.1uF(Cer) | C5 C6 C8 C10 C11 C14 |
| 11 | 1 | 47 | R4 |
| 12 | 1 | 1K | R3 |
| 13 | 1 | 2.2K | R2 |
| 14 | 1 | 33K | R1 |
| 15 | 1 | 1uH | L1 |
| 16 | 3 | 1.8uH | L2 L3 L4 |
| 17 | 1 | HA19510MP | IC1 |
| 18 | 1 | TC7W04F | IC3 |
| 19 | 1 | NIS-506 | IC2 |
| 20 | 1 | 16.777216MHz | X1 |
| 21 | 1 | 9205B-1-13A-T | P1 |

IF UNIT

| Part | Used | PartType | Designators |
|------|------|---------------------------|---|
| 1 | 1 | 1pF (Cer) | C39 |
| 2 | 1 | 3pF (Cer) | C38 |
| 3 | 2 | 4pF (Cer) | C177 C178 |
| 4 | 3 | 5pF (Cer) | C34 C167 C168 |
| 5 | 2 | 8pF (Cer) | C32 C215 |
| 6 | 7 | 10pF (Cer) | C18 C27 C29 C61 C66 C196 C218 |
| 7 | 4 | 12pF (Cer) | C37 C175 C176 C214 |
| 8 | 4 | 15pF (Cer) | C42 C44 C96 C217 |
| 9 | 2 | 18pF (Cer) | C23 C33 |
| 10 | 1 | 22pF (Cer) | C113 |
| 11 | 1 | 25pF (TZBX4Z250BB110) TC1 | |
| 12 | 6 | 33pF (Cer) | C144 C145 C148 C149 C152 C153 |
| 13 | 4 | 39pF (Cer) | C28 C59 C81 C216 |
| 14 | 6 | 47pF (Cer) | C17 C64 C69 C80 C120 C201 |
| 15 | 2 | 56pF (Cer) | C172 C173 |
| 16 | 3 | 100pF(Cer) | C47 C50 C87 |
| 17 | 1 | 220pF(Cer) | C121 |
| 18 | 1 | 270pF(Cer) | C90 |
| 19 | 3 | 330pF(Cer) | C101 C106 C111 |
| 20 | 13 | 1nF (Cer) | C25 C53 C71 C79 C100 C103 C108 C115 C123 C124 C164 C165 C166 |
| 21 | 1 | 1.2nF(Cer) | C197 |
| 22 | 1 | 2.2nF(Cer) | C198 |
| 23 | 1 | 3.3nF(Cer) | C199 |
| 24 | 68 | 10nF (Cer) | C1 C2 C3 C4 C5 C6 C12 C13 C14 C16 C19 C20 C22 C24 C26 C30 C31 C35 C36 C40 C41 C45 C46 C48 C49 C51 C52 C55 C56 C57 C60 C63 C65 C68 C70 C72 C73 C74 C122 C135 C136 C137 C138 C139 C171 C179 C180 C181 C182 C183 C184 C187 C188 C189 C190 C191 C192 C193 C202 C203 C204 C205 C206 C207 C208 C209 C210 C211 |
| 25 | 1 | 33nF (Cer) | C200 |
| 26 | 49 | 0.1uF (Cer) | C15 C21 C54 C62 C67 C75 C77 C84 C85 C86 C88 C89 C91 C92 C93 C94 C95 C97 C98 C99 C102 C104 C105 C107 C109 C110 C112 C118 C119 C140 C141 C142 C143 C146 C147 C150 C151 C154 C155 C156 C157 C158 C159 C160 C161 C162 C163 C170 C219 |
| 27 | 1 | 0.22uF(Cer) | C78 |
| 28 | 2 | 0.22uF/35V(Tan) | C76 C132 |
| 29 | 5 | 1uF (Cer) | C114 C116 C117 C125 C126 |
| 30 | 3 | 1uF/16V (Tan) | C114 C116 C117 C125 C126 C127 C130 C133 |
| 31 | 1 | 2.2uF/50V (Ele) | C131 |
| 32 | 6 | 10uF/16V (Ele) | C128 C129 C134 C194 C195 C213 |
| 33 | 1 | 100uF/16V(Ele) | C11 |
| 34 | 4 | 220uF/10V(Ele) | C8 C9 C10 C83 |
| 35 | 1 | 470uF/16V(Ele) | C7 |
| 36 | 5 | 0 | R62 R198 R203 R248 R279 |
| 37 | 2 | 47 | R12 R18 |
| 38 | 18 | 100 | R17 R23 R29 R35 R41 R47 R53 R68 R74 R94 R161 R176 R181 R186 R191 R196 R201 R206 |
| 39 | 1 | 150(Axi) | R281 |
| 40 | 25 | 220 | R6 R10 R20 R26 R32 R38 R44 R50 R58 R66 R88 R115 R117 R122 R124 R129 R131 |

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| | | | R139 R174 R179 R184 R189 R194 R199 |
| | | | R204 |
| 41 | 5 | 330 | R21 R45 R51 R72 R193 |
| 42 | 2 | 470 | R4 R5 |
| 43 | 3 | 560 | R16 R43 R49 |
| 44 | 2 | 680 | R101 R136 |
| 45 | 6 | 820 | R27 R33 R46 R173 R262 R263 |
| 46 | 19 | 1K | R22 R59 R73 R75 R76 R77 R100 R106 R108 |
| | | | R132 R133 R141 R142 R144 R145 R151 R152 |
| | | | R183 R188 |
| 47 | 1 | 1K (Axi) | R276 |
| 48 | 2 | 1.2K | R102 R105 |
| 49 | 1 | 1.2K(Axi) | R274 |
| 50 | 5 | 1.5K | R28 R40 R52 R178 R205 |
| 51 | 1 | 1.5K(Axi) | R280 |
| 52 | 1 | 1.8K | R200 |
| 53 | 13 | 2.2K | R11 R42 R48 R61 R89 R116 R123 R130 R137 |
| | | | R187 R202 R271 R273 |
| 54 | 1 | 2.7K | R107 |
| 55 | 8 | 3.3K | R36 R67 R118 R125 R185 R192 R197 R272 |
| 56 | 1 | 3.9K | R195 |
| 57 | 15 | 4.7K | R24 R30 R34 R54 R87 R95 R164 R172 R177 |
| | | | R180 R182 R190 R207 R236 R252 |
| 58 | 1 | 4.7K(Axi) | R171 |
| 59 | 2 | 6.8K | R216 R217 |
| 60 | 4 | 8.2K | R147 R153 R175 R240 |
| 61 | 27 | 10K | R2 R9 R15 R57 R65 R71 R90 R92 R98 R114 |
| | | | R121 R128 R134 R140 R143 R166 R168 |
| | | | R227 R228 R232 R237 R238 R239 R251 |
| | | | R270 R277 R278 |
| 62 | 1 | 10K (Axi) | R275 |
| 63 | 6 | 10K(RH0421C14J10K) | VR1 VR2 VR3 VR4 VR6 VR7 |
| 64 | 1 | 10K(RVG4M08-103VM) | VR8 |
| 65 | 2 | 12K | R55 R150 |
| 66 | 4 | 15K | R103 R155 R218 R234 |
| 67 | 4 | 18K | R91 R170 R249 R269 |
| 68 | 1 | 20K | R235 |
| 69 | 4 | 22K | R97 R148 R253 R254 |
| 70 | 4 | 27K | R13 R126 R219 R247 |
| 71 | 6 | 33K | R7 R63 R112 R119 R242 R256 |
| 72 | 5 | 39K | R1 R3 R69 R157 R220 |
| 73 | 2 | 43K | R158 R241 |
| 74 | 4 | 47K | R149 R159 R221 R222 |
| 75 | 1 | 47K(RH0421CS4J47K) | VR5 |
| 76 | 1 | 56K | R96 |
| 77 | 3 | 68K | R154 R156 R250 |
| 78 | 1 | 82K | R93 |
| 79 | 29 | 100K | R8 R14 R56 R64 R70 R85 R109 R110 R111 |
| | | | R113 R120 R127 R138 R146 R162 R163 |
| | | | R165 R167 R229 R230 R231 R233 R243 |
| | | | R244 R245 R246 R255 R257 R268 |
| 80 | 23 | 220K | R78 R79 R80 R81 R82 R83 R84 R99 R104 |
| | | | R135 R160 R169 R208 R209 R210 R211 |
| | | | R212 R213 R214 R215 R223 R225 R226 |
| 81 | 2 | 560K | R86 R224 |
| 82 | 1 | RKM10L203G | NR1 |
| 83 | 4 | 10uH | L1 L2 L3 L4 |
| 84 | 5 | 1S2837 | D16 D18 D19 D20 D40 |
| 85 | 1 | 1SS268 | D21 |
| 86 | 6 | 1SV196 | D3 D4 D7 D8 D9 D12 |
| 87 | 2 | HN2D01F | D17 D22 |
| 88 | 1 | RB500V-40 | D41 |
| 89 | 23 | RN731V | D1 D2 D5 D6 D10 D11 D13 D14 D15 D26 |

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|-----|----|------------------|--|
| | | | D27 D28 D29 D30 D31 D32 D33 D34 D35 |
| | | | D36 D37 D38 D39 |
| 90 | 2 | ND411G-1 | D24 D25 |
| 91 | 1 | ND487C1T | D23 |
| 92 | 1 | 2SC1009A | Q29 |
| 93 | 3 | 2SC1623 | Q28 Q31 Q32 |
| 94 | 1 | 2SC2787 | Q40 |
| 95 | 1 | 2SK520 | Q3 |
| 96 | 8 | 3SK131 | Q4 Q5 Q6 Q7 Q8 Q25 Q26 Q27 |
| 97 | 20 | DTC124EK | Q1 Q2 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q20 Q21 Q22 Q30 Q33 Q34 Q35 Q36 Q37 Q38 Q39 |
| 98 | 1 | F2 | PI28A10F |
| 99 | 6 | FMC5 | Q16 Q17 Q18 Q19 Q23 Q24 |
| 100 | 4 | TC4W53F | IC19 IC21 IC24 IC28 |
| 101 | 2 | TC7S66F | IC11 IC18 |
| 102 | 1 | UPC4570G | IC29 |
| 103 | 5 | uPC358G | IC6 IC10 IC20 IC22 IC23 |
| 104 | 2 | uPC4570G | IC14 IC15 |
| 105 | 1 | uPD74HC238G | IC9 |
| 106 | 1 | uPD74HC4051G | IC13 |
| 107 | 3 | uPD74HC4052G | IC25 IC26 IC30 |
| 108 | 3 | uPD74HC4066G | IC12 IC16 IC17 |
| 109 | 5 | uPD4094BG | IC1 IC2 IC3 IC4 IC5 |
| 110 | 1 | uPD4528BG | IC7 |
| 111 | 1 | MC3372M | IC8 |
| 112 | 1 | NIS-157 | IC27 |
| 113 | 1 | NIS-158 | IC31 |
| 114 | 1 | 10.245MHz | X1 |
| 115 | 2 | 10M03B | XF1 XF2 |
| 116 | 2 | 10M06B | XF3 XF4 |
| 117 | 2 | 10M15B | XF5 XF6 |
| 118 | 2 | 10M30B | XF7 XF8 |
| 119 | 1 | SFE10.7MHYK-A | CF5 |
| 120 | 1 | SFE10.7MS2A10K-A | CF6 |
| 121 | 1 | 526-8693-010 | MF1(OP) |
| 122 | 1 | 526-8694-010 | MF2(OP) |
| 123 | 1 | 526-8695-010 | MF3(OP) |
| 124 | 1 | CDB455C16 | CD1 |
| 125 | 1 | CFJ455K5 | CF1 |
| 126 | 1 | CFWS455G | CF3 |
| 127 | 1 | CFWS455E | CF4 |
| 128 | 1 | SFH455B | CF2 |
| 129 | 1 | NIS-155 | LCF1 |
| 130 | 1 | NIS-156 | LCF2 |
| 131 | 4 | KE-04980 | T9 T10 T11 T12 |
| 132 | 1 | KE-07651 | T1 |
| 133 | 4 | KE-07791 | T2 T6 T7 T8 |
| 134 | 3 | KE-07792 | T3 T4 T5 |
| 135 | 1 | PI22A06M | J1 |
| 136 | 1 | PI28A02M | J11 |
| 137 | 1 | PI28A03M | J4 |
| 138 | 1 | PI28A07M | J5 |
| 139 | 1 | PI28A08M | J6 |
| 140 | 1 | PI28A09M | J3 |
| 141 | 1 | PI28A11M | J2 |
| 142 | 1 | PI28A08F | F1 |
| 143 | 1 | PI28A10F | F2 |
| 144 | 1 | IMSA-9110B-07 | J10 |
| 145 | 3 | TMP-J01X-V6 | J7 J8 J9 |
| 146 | 1 | JP-No.1 | JA |
| 147 | 1 | JP-No.2 | JB |
| 148 | 1 | JP-No.3 | JC |

| | | | |
|-----|---|-----------|----|
| 149 | 1 | JP-No.4 | JD |
| 150 | 1 | JP-No.5 | JE |
| 151 | 1 | JP-No.117 | JF |
| 152 | 1 | JP-No.107 | JG |
| 153 | 1 | JP-No.106 | JH |
| 154 | 1 | JP-No.126 | JI |
| 155 | 1 | JP-No.127 | JJ |

455FILA UNIT(NIS-155 BW=100kHz)

| Part | Used | PartType | Designators |
|------|------|-------------|------------------|
| 1 | 1 | 180pF(Cer) | C5 |
| 2 | 2 | 220pF(Cer) | C4 C9 |
| 3 | 2 | 270pF(Cer) | C2 C7 |
| 4 | 5 | 330pF(Cer) | C3 C6 C8 C10 C11 |
| 5 | 2 | 0.1uF (Cer) | C1 C12 |
| 6 | 1 | 220 | R1 |
| 7 | 2 | 56uH | L3 L5 |
| 8 | 2 | 68uH | L1 L7 |
| 9 | 2 | 82uH | L2 L6 |
| 10 | 1 | 270uH | L4 |
| 11 | 2 | 330uH | L8 L9 |
| 12 | 5 | 010-1.2-P | P1 P2 P3 P4 P5 |

455FILB UNIT(NIS-156 BW=220kHz)

| Part | Used | PartType | Designators |
|------|------|-------------|----------------|
| 1 | 2 | 180pF(Cer) | C4 C5 |
| 2 | 5 | 220pF(Cer) | C2 C3 C6 C7 C9 |
| 3 | 3 | 330pF(Cer) | C8 C10 C11 |
| 4 | 2 | 0.1uF (Cer) | C1 C12 |
| 5 | 1 | 220 | R1 |
| 6 | 2 | 68uH | L1 L7 |
| 7 | 2 | 82uH | L2 L6 |
| 8 | 2 | 150uH | L3 L5 |
| 9 | 1 | 270uH | L4 |
| 10 | 2 | 330uH | L8 L9 |
| 11 | 5 | 010-1.2-P | P1 P2 P3 P4 P5 |

AUDIOBPF UNIT(NIS-157)

| Part | Used | PartType | Designators |
|------|------|------------------|--|
| 1 | 2 | 47pF (Cer) | C17 C18 |
| 2 | 1 | 470pF(Cer) | C21 |
| 3 | 1 | 8.2nF(Cer) | C20 |
| 4 | 12 | 10nF (Cer) | C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 |
| 5 | 3 | 22nF (Cer) | C1 C2 C3 |
| 6 | 1 | 33nF (Cer) | C22 |
| 7 | 2 | 1uF (Cer) | C16 C19 |
| 8 | 1 | 0 | R14 |
| 9 | 1 | 1.8K | R21 |
| 10 | 1 | 2.2K | R25 |
| 11 | 1 | 2.7K | R29 |
| 12 | 1 | 3.3K | R9 |
| 13 | 1 | 3.9K | R17 |
| 14 | 2 | 5.1K | R20 R28 |
| 15 | 1 | 5.6K | R24 |
| 16 | 1 | 6.8K | R8 |
| 17 | 3 | 8.2K | R19 R23 R27 |
| 18 | 3 | 10K | R18 R22 R26 |
| 19 | 1 | 12K | R6 |
| 20 | 1 | 15K | R5 |
| 21 | 2 | 22K | R4 R7 |
| 22 | 2 | 47K | R2 R16 |
| 23 | 2 | 62K | R1 R15 |
| 24 | 1 | 82K | R3 |
| 25 | 4 | 100K | R30 R31 R32 R33 |
| 26 | 1 | 220K | R13 |
| 27 | 1 | 270K | R12 |
| 28 | 1 | 390K | R11 |
| 29 | 1 | 1.5M | R10 |
| 30 | 2 | uPC4570G | IC5 IC6 |
| 31 | 4 | uPD74HC4052G | IC1 IC2 IC3 IC4 |
| 32 | 1 | 9205B-1-04Z002-T | P1 |
| 33 | 2 | 9205B-1-04Z-T | P2 P3 |

AUDIO UNIT

| Part | Used | PartType | Designators |
|------|------|------------------|---|
| 1 | 2 | 36pF (Cer) | C8 C9 |
| 2 | 1 | 100pF(Cer) | C50 |
| 3 | 3 | 330pF(Cer) | C12 C21 C49 |
| 4 | 1 | 1.8nF (Cer) | C45 |
| 5 | 1 | 5.6nF (Cer) | C39 |
| 6 | 19 | 10nF (Cer) | C3 C4 C5 C6 C7 C14 C15 C17 C18 C19 C23 C24 C25 C46 C51 C52 C59 C60 C63 |
| 7 | 1 | 22nF (Cer) | C40 |
| 8 | 12 | 0.1uF(Cer) | C1 C2 C10 C11 C13 C20 C22 C26 C42 C47 C57 C58 |
| 9 | 3 | 1uF/16V (Tan) | C31 C61 C62 |
| 10 | 6 | 2.2uF/6.3V (Tan) | C29 C30 C32 C41 C43 C44 |
| 11 | 2 | 4.7uF/6.3V (Tan) | C27 C48 |
| 12 | 1 | 10uF/6.3V (Tan) | C28 |
| 13 | 4 | 10uF/16V (Ele) | C36 C53 C54 C56 |
| 14 | 3 | 100uF/16V (Ele) | C34 C35 C55 |
| 15 | 2 | 470uF/16V (Ele) | C37 C38 |
| 16 | 2 | 470 | R13 R46 |
| 17 | 7 | 1K | R1 R7 R9 R18 R19 R40 R43 |
| 18 | 1 | 1.5K | R31 |
| 19 | 1 | 2.2K | R48 |
| 20 | 1 | 5.6K | R47 |
| 21 | 4 | 10K | R5 R12 R16 R29 |
| 22 | 5 | 22K | R4 R15 R32 R33 R34 |
| 23 | 7 | 47K | R6 R23 R24 R25 R26 R27 R28 |
| 24 | 7 | 100K | R2 R17 R22 R35 R41 R44 R45 |
| 25 | 3 | 220K | R3 R30 R36 |
| 26 | 1 | 330K | R20 |
| 27 | 2 | 470K | R10 R11 |
| 28 | 1 | 560K | R21 |
| 29 | 1 | 1S2837 | D1 |
| 30 | 1 | ND411G-1 | D2 |
| 31 | 2 | RB500V-40 | D3 D4 |
| 32 | 1 | 2SK160 | Q2 |
| 33 | 2 | 2SK680 | Q1 Q7 |
| 34 | 1 | FMC5 | Q5 |
| 35 | 1 | TC4S81F | IC13 |
| 36 | 1 | TC4SU69F | IC6 |
| 37 | 2 | TC4W53F | IC1 IC3 |
| 38 | 1 | uPC358G | IC9 |
| 39 | 2 | uPC4570G | IC5 IC10 |
| 40 | 1 | LA4425A | IC4 |
| 41 | 1 | LC73881M | IC12 |
| 42 | 1 | AQV212A | IC8 |
| 43 | 1 | BA1604F | IC11 |
| 44 | 1 | BH3532FS | IC2 |
| 45 | 1 | CSA4.19MG | CX1 |
| 46 | 1 | PI22A02M | J3 |
| 47 | 1 | PI22A03M | J2 |
| 48 | 1 | PI22A04M | J1 |
| 49 | 1 | PI22A05M | J5 |
| 50 | 1 | PI28A03M | J6 |
| 51 | 1 | PI28A07M | J7 |
| 52 | 1 | PI28A08M | J8 |
| 53 | 1 | PI28A13M | J4 |
| 54 | 1 | JP-No.7 | JP1 |
| 55 | 1 | JP-No.108 | JP2 |

VR UNIT

| Part | Used | PartType | Designators |
|------|------|----------------------|-------------|
| 1 | 1 | 10KC(RK0971110-10KC) | VR2 |
| 2 | 1 | 50KA(RK0971110-50KA) | VR1 |
| 3 | 1 | PI28B06M | J1 |

CPUSUB UNIT

| Part | Used | PartType | Designators |
|------|------|-----------------|----------------|
| 1 | 5 | 0.1uF (Cer) | C2 C4 C5 C6 C7 |
| 2 | 1 | 100uF/10V(Ele) | C1 |
| 3 | 1 | 0.47F/5.5V(Ele) | C3 |
| 4 | 1 | 10 | R1 |
| 5 | 2 | 10K | R4 R5 |
| 6 | 2 | 100K | R2 R3 |
| 7 | 1 | HN58C1001FP-15 | IC3 |
| 8 | 1 | TC4SU69F | IC4 |
| 9 | 2 | uPD74HC373GS | IC1 IC2 |
| 10 | 1 | PI28A15M | J1 |

CTCSS UNIT(NIS-158)

| Part | Used | PartType | Designators |
|------|------|------------------|-------------|
| 1 | 2 | 18pF (Cer) | C7 C8 |
| 2 | 1 | 82pF (Cer) | C3 |
| 3 | 1 | 100pF(Cer) | C10 |
| 4 | 1 | 1nF (Cer)] | C2 |
| 5 | 3 | 0.1uF (Cer) | C1 C4 C6 |
| 6 | 2 | 1uF/16v (Tan) | C11 C12 |
| 7 | 1 | 4.7uF/6.3V(Tan) | C9 |
| 8 | 1 | 10uF/16V (Ele) | C5 |
| 9 | 1 | 5.6K | R13 |
| 10 | 1 | 10K | R8 |
| 11 | 1 | 15K | R10 |
| 12 | 1 | 47K | R7 |
| 13 | 1 | 68K | R5 |
| 14 | 3 | 100K | R1 R2 R3 |
| 15 | 1 | 120K | R4 |
| 16 | 2 | 270K | R6 R14 |
| 17 | 1 | 330K | R11 |
| 18 | 1 | 1M | R12 |
| 19 | 1 | HN2D01F | D1 |
| 20 | 1 | AK2341 | IC1 |
| 21 | 1 | 3.6864MHz | X1 |
| 22 | 1 | 9205B-1-12002-TA | P1 |

POWER UNIT

| Part | Used | PartType | Designators |
|------|------|-----------------|---------------------------|
| 1 | 7 | 0.1uF(Cer) | C1 C3 C13 C14 C16 C17 C21 |
| 2 | 2 | 10uF/16V (Ele) | C2 C15 |
| 3 | 3 | 100uF/10V (Ele) | C5 C9 C10 |
| 4 | 2 | 100uF/16V (Ele) | C11 C12 |
| 5 | 2 | 100uF/10V (Os) | C7 C20 |
| 6 | 2 | 150uF/16V (Os) | C4 C6 |
| 7 | 2 | 220uF/35V (Ele) | C18 C19 |
| 8 | 1 | 2200uF/16V(Ele) | C8 |
| 9 | 1 | 3.3 | R9 |
| 10 | 1 | 2.2K | R6 |
| 11 | 2 | 4.7K | R7 R8 |
| 12 | 1 | 10K | R4 |
| 13 | 1 | 22K | R1 |
| 14 | 1 | 33K | R5 |
| 15 | 2 | 47K | R2 R3 |
| 16 | 3 | 220uH(Rad) | L1 L2 L3 |
| 17 | 1 | 220uH | L4 |
| 18 | 2 | 1S2837 | D1 D3 |
| 19 | 1 | 3GWJ42 | D2 |
| 20 | 1 | 2SB624 | Q3 |
| 21 | 1 | 2SJ330 | Q1 |
| 22 | 2 | DTA123YK | Q4 Q5 |
| 23 | 1 | DTC124EK | Q2 |
| 24 | 1 | S-80840ANUP | IC1 |
| 25 | 2 | S-81252SGUP | IC4 IC5 |
| 26 | 1 | TA79L05F | IC6 |
| 27 | 1 | KPL108 | IC2 |
| 28 | 1 | KPL130 | IC3 |
| 29 | 1 | FUSE2A | FH1 |
| 30 | 1 | PI22A02M | J4 |
| 31 | 1 | PI22A05M | J2 |
| 32 | 1 | PI22A06M | J1 |
| 33 | 1 | PI22A07M | J3 |
| 34 | 1 | PI22A08M | J7 |
| 35 | 1 | PI22A09M | J5 |
| 36 | 1 | PI28A09M | J6 |
| 37 | 1 | JP-No.105 | JP1 |
| 38 | 1 | JP-No.104 | JP2 |

POWERSUB UNIT

| Part | Used | PartType | Designators |
|------|------|-------------|-------------------|
| 1 | 6 | 0.1uF(Cer) | C1 C2 C3 C4 C5 C6 |
| 2 | 1 | uPC7805AHF | IC1 |
| 3 | 1 | uPC78M06AHF | IC2 |
| 4 | 1 | uPC2410AHF | IC3 |
| 5 | 1 | PI22A06M | J1 |

REMOTE UNIT

| Part | Used | PartType | Designators |
|------|------|-----------------|------------------|
| 1 | 5 | 100pF (Cer) | C2 C3 C4 C12 C13 |
| 2 | 1 | 10nF (Cer) | C11 |
| 3 | 1 | 0.1uF (Cer) | C1 |
| 4 | 5 | 2.2uF/16V(Tan) | C6 C7 C8 C9 C10 |
| 5 | 1 | 100uF/10V(Ele) | C5 |
| 6 | 1 | 100K | R1 |
| 7 | 1 | 220uH | L1 |
| 8 | 2 | BLM21A121 | L2 L3 |
| 9 | 1 | MAX232CSE | IC1 |
| 10 | 1 | TC4S81F | IC2 |
| 11 | 1 | HSJ0847-01-010 | J4 |
| 12 | 1 | JPJ2545-01-510 | J5 |
| 13 | 1 | PI22B04M | J2 |
| 14 | 1 | PI28B06M | J1 |
| 15 | 1 | PI28B08M | J7 |
| 16 | 1 | 09KC0019 | J3 |
| 17 | 1 | TCS6180-01-1010 | J6 |
| 18 | 1 | JP-No.110 | JP1 |

AFC UNIT

| Part | Used | PartType | Designators |
|------|------|-----------------|-------------|
| 1 | 1 | 15pF (Cer) | C1 |
| 2 | 1 | 100pF(Cer UJ) | C5 |
| 3 | 1 | 150pF(Cer) | C15 |
| 4 | 1 | 270pF(Cer UJ) | C4 |
| 5 | 1 | 330pF(Cer UJ) | C2 |
| 6 | 2 | 1nF (Cer) | C11 C13 |
| 7 | 2 | 10nF (Cer) | C6 C12 |
| 8 | 3 | 0.1uF (Cer) | C3 C9 C14 |
| 9 | 1 | 2.2uF/16V (Tan) | C8 |
| 10 | 1 | 4.7uF/6.3V(Tan) | C7 |
| 11 | 1 | 10uF/6.3V (Os) | C10 |
| 12 | 2 | 100 | R11 R12 |
| 13 | 1 | 470 | R6 |
| 14 | 3 | 4.7K | R7 R14 R15 |
| 15 | 2 | 6.8K | R3 R4 |
| 16 | 2 | 10K | R2 R13 |
| 17 | 1 | 39K | R9 |
| 18 | 1 | 47K | R5 |
| 19 | 1 | 56K | R8 |
| 20 | 1 | 100K | R10 |
| 21 | 2 | KE-04980 | T1 T2 |
| 22 | 1 | 2SK160 | Q1 |
| 23 | 1 | TC4W53F | IC1 |
| 24 | 1 | MC3372M | IC2 |
| 25 | 1 | uPC358G | IC3 |
| 26 | 1 | PI28A10M | J1 |

ACC1 UNIT

| Part | Used | PartType | Designators |
|------|------|----------------|-------------|
| 1 | 1 | TCS7932-18-201 | J1 |

SAM UNIT

| Part | Used | PartType | Designators |
|------|------|----------------|---------------------|
| 1 | 2 | 22pF (Cer) | C20 C21 |
| 2 | 2 | 330pF(Cer) | C18 C19 |
| 3 | 3 | 1nF (Cer) | C15 C16 C17 |
| 4 | 1 | 0.1uF (Cer) | C28 |
| 5 | 4 | 2.2uF/16V(Tan) | C22 C23 C24 C25 |
| 6 | 2 | 33uF/10V (Ele) | C26 C27 |
| 7 | 1 | 220 | R37 |
| 8 | 1 | 470 | R43 |
| 9 | 3 | 1K | R28 R29 R30 |
| 10 | 5 | 2.2K | R23 R24 R25 R26 R27 |
| 11 | 4 | 10K | R31 R32 R33 R34 |
| 12 | 2 | 39K | R35 R36 |
| 13 | 1 | 47K | R41 |
| 14 | 2 | 100K | R39 R40 |
| 15 | 1 | 220K | R22 |
| 16 | 1 | 470K | R42 |
| 17 | 1 | RB500V-40 | D2 |
| 18 | 3 | 2SC1009A | Q5 Q6 Q7 |
| 19 | 1 | DTC144TK | Q8 |
| 20 | 1 | MC14046B | IC4 |
| 21 | 2 | TC4W53F | IC5 IC6 |
| 22 | 2 | KE-04980 | T3 T4 |
| 23 | 2 | PI28A09M | J1 |

TRSW1 UNIT

| Part | Used | PartType | Designators |
|------|------|-----------|-------------|
| 1 | 1 | 68nF(Cer) | C1 |
| 2 | 1 | DTC124EK | Q1 |

TRSW2 UNIT

| Part | Used | PartType | Designators |
|------|------|----------------|-------------|
| 1 | 1 | 10uF/6.3V(Tan) | C1 |
| 2 | 1 | DTC124EK | Q1 |

TRSW3 UNIT

| Part | Used | PartType | Designators |
|------|------|----------|-------------|
| 1 | 1 | 10K | R1 |
| 2 | 1 | DTC124EK | Q1 |

NB UNIT

| Part | Used | PartType | Designators |
|------|------|--------------------|-------------------------------------|
| 1 | 1 | 10pF (Cer) | C33 |
| 2 | 1 | 27pF (Cer) | C38 |
| 3 | 3 | 47pF (Cer) | C34 C35 C36 |
| 4 | 4 | 1nF (Cer) | C26 C27 C29 C31 |
| 5 | 10 | 10nF (Cer) | C2 C6 C7 C9 C12 C13 C14 C16 C18 C22 |
| 6 | 1 | 47nF (Cer) | C39 |
| 7 | 1 | 0.1uF(Cer) | C1 |
| 8 | 1 | 1uF/16V(Tan) | C32 |
| 9 | 2 | 100 | R35 R36 |
| 10 | 2 | 220 | R43 R44 |
| 11 | 1 | 330 | R49 |
| 12 | 2 | 470 | R38 R39 |
| 13 | 3 | 1K | R14 R18 R30 |
| 14 | 1 | 4.7K | R46 |
| 15 | 4 | 10K | R4 R5 R8 R9 |
| 16 | 1 | 15K | R34 |
| 17 | 2 | 22K | R32 R33 |
| 18 | 3 | 33K | R1 R2 R3 |
| 19 | 1 | 39K | R45 |
| 20 | 1 | 47K | R40 |
| 21 | 1 | 47K(RH0421CS4J47K) | VR1 |
| 22 | 2 | 100K | R47 R48 |
| 23 | 2 | 150K | R41 R42 |
| 24 | 1 | ND411G-1 | D1 |
| 25 | 4 | 2SC1009A | Q14 Q15 Q16 Q17 |
| 26 | 2 | 2SC1623 | Q11 Q12 |
| 27 | 1 | 2SK520 | Q18 |
| 28 | 1 | 3SK131 | Q19 |
| 29 | 1 | DTA124EK | Q1 |
| 30 | 1 | DTC124TK | Q20 |
| 31 | 1 | DTC144TK | Q13 |
| 32 | 1 | uPD4528BG | IC1 |
| 33 | 3 | KE-07791 | T1 T2 T5 |
| 34 | 1 | PI28A08M | J1 |
| 35 | 1 | JP-No.128 | JP1 |
| 36 | 1 | JP-No.129 | JP2 |

PHONE UNIT

| Part | Used | PartType | Designators |
|------|------|-----------------|-------------|
| 1 | 2 | 100 | R1 R2 |
| 2 | 1 | HLJ2305-01-3070 | J1 |

AR5000 PARTS LIST MISCELLANEOUS

FRONT PANEL ASSEMBLY

1. PLASTIC FRONT PANEL
2. ACRYLE WINDOW
3. BEARING
4. BRAKE LEVER
5. KEYTOP POWER
6. KEYTOP FUNC
7. KEYTOP 1
8. KEYTOP 2
9. KEYTOP 3
10. KEYTOP 4
11. KEYTOP 5
12. KEYTOP 6
13. KEYTOP 7
14. KEYTOP 8
15. KEYTOP 9
16. KEYTOP .
17. KEYTOP SRCH
18. KEYTOP SCAN
19. KEYTOP PRIO
20. KEYTOP VFO
21. KEYTOP MODE
22. KEYTOP STEP
23. KEYTOP PASS
24. KEYTOP MHz
25. KEYTOP kHz
26. KEYTOP ATT
27. KEYTOP CLR
28. KEYTOP UP
29. KEYTOP DOWN
30. KNOB MAIN DIAL
31. KNOB SUB DIAL
32. KNOB VOL/SQL 2pcs. w/white line
33. ENCODER MAIN EC24B , RES20D50-201-1 for s/n 077001 up
34. ENCODER SUB EC16B , RVB35KCINA1-2-24PCE for s/n 077001 up
35. POTENTIOMETER VOL RK097-50KA
36. POTENTIOMETER SQL RK097-10KC
37. SOCKET ACC1 TCS7972
38. SOCKET PHONES HLJ2305

REAR PANEL ASSEMBLY

1. COAXIAL SOCKET ANT1 WA-N220
2. COAXIAL SOCKET ANT2 WA-M220
3. COAXIAL SOCKET IF BNC-L80
4. COAXIAL SOCKET STD BNC-L210
5. POWER SOCKET J0409
6. MUTE SOCKET JPJ2545
7. EXT. SP SOCKET HSJ0847
8. REMOTE SOCKET 09KC0019
9. ACC2 SOCKET TCS6180

ENCLOSURE

1. UPPER CASE
2. LOWER CASE WITH SPEAKER, HOOD AND ATTACHMENT)
3. PLASTIC LEG WITH MOLDED SCREW 4 PCS.
4. PLASTIC SUPPORT WITH METAL INSERT 2 PCS.
5. RUBBER FOOT 4 PCS.

AR5000 EXPLODED VIEW

