7. ADJUSTMENT

7-1 PREPARATION

(1) Initial settings

Set the respective switches and controls as shown below.

LOCK button	: OFF
RF GAIN	: Fully clockwise
TONE control	: Center position
NOTCH button	: OFF
SQ LEVEL control	: Fully counterclockwise (OFF)
PBS control	: Center position (OFF)
NB button	: OFF
ATT button	: OFF

(2) Required Measuring Instruments

DC (AC) voltmeter	: Digital voltmeter
Frequency counter	: 10kHz to 1500MHz
RF voltmeter	: 455kHz to 150MHz, 0.001 to 3Vrms
VU meter	: 600 Ω , 0 to 35dBm
Level meter	: 600 Ω /10K Ω , -50 to 30dBm
Distortion meter	: 600 Ω /10K Ω , 0.5 to 30%
CR OSC	: 600 Ω , 10Hz to 5kHz
SG	: 50 Ω , -20 to 120dBuV, 90kHz to 2000MHz AM/FM modulation, with external modulation connector Note: The SG output voltage shown above is when output is open. Note that output is terminated with 50 Ω for measuring sensitivity.
Spectrum analyzer	: 100kHz to 2000MHz
Tracking generator	: 50 Ω , 100kHz to 2000MHz
Oscilloscope	: Dual-channel DC to 100MHz
Transformer	: 4: 600 Ω (3W)

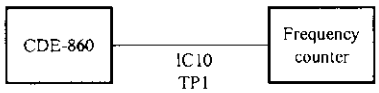
(3) Extension Unit : CMH-365

7-2 CBD-1363 POWER CIRCUIT

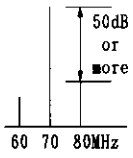
NO.	ITEM	ADJUSTING PROCEDURE		RATING
1	Secondary voltage check of power transformer	① Connect the AC power cable. Set the AC supply voltage as appropriate for the respective model: NRD-545J (Japan): 100VAC NRD-545U (USA): 120VAC NRD-545G (Europe): 220VAC ② Connect the receiver to the appropriate power supply. ③ Turn ON the POWER switch and measure the secondary voltage (BLU-BLK) at rear panel T1.		13~16VAC
2	Input voltage check	① Using a DC voltmeter, check the voltage at W14-9	AC power supply	15~18.5VDC
			DC power supply	13~14VDC
3	10.8VDC adjustment (RV1)	① Connect a DC voltmeter to W14-12. ② Adjust RV1 so that the voltmeter indicates a voltage of 10.8V.		10.8 ± 0.1VDC
4	5V check	① Check that W14-1 is 5VDC. ② Check that W14-4 is 5VDC.		4.8~5.2VDC 4.8~5.2VDC
5	10V check	① Check that W14-7 is 10VDC.		9.8~10.2VDC
6	DC power supply check	① Disconnect the AC power cable and connect a 13.8V ± 0.1V DC power supply. ② Recheck the voltages in NO. 2 to 5.		

7-3 CDE-860 DISPLAY UNIT

<table>
<tr><th>NO.</th><th>ITEM</th><th>ADJUSTING PROCEDURE</th><th>RATING</th></tr>
<tr><td>1</td><td>Memory setting</td><td>① Store the following frequencies in the memory channels.
BANDWIDTH: INTER (all channels)
AGC: OFF ATT: OFF
<table>
<tr><th>Channel No.</th><th>Frequency (MHz)</th><th>MODE</th><th>Channel No.</th><th>Frequency (MHz)</th><th>MODE</th></tr>
<tr><td>0</td><td>0.106</td><td>AM</td><td>16</td><td>20.499</td><td>AM</td></tr>
<tr><td>1</td><td>0.399</td><td>AM</td><td>17</td><td>20.5</td><td>AM</td></tr>
<tr><td>2</td><td>0.4</td><td>AM</td><td>18</td><td>21.3</td><td>AM</td></tr>
<tr><td>3</td><td>0.799</td><td>AM</td><td>19</td><td>28.2</td><td>AM</td></tr>
<tr><td>4</td><td>0.8</td><td>AM</td><td>20</td><td>29.99</td><td>AM</td></tr>
<tr><td>5</td><td>1.599</td><td>AM</td><td>21</td><td>30.1</td><td>AM</td></tr>
<tr><td>6</td><td>1.605</td><td>AM</td><td>22</td><td>107.9</td><td>AM</td></tr>
<tr><td>7</td><td>2.649</td><td>AM</td><td>23</td><td>145.04</td><td>FM</td></tr>
<tr><td>8</td><td>2.65</td><td>AM</td><td></td><td></td><td></td></tr>
<tr><td>9</td><td>4.399</td><td>AM</td><td></td><td></td><td></td></tr>
<tr><td>10</td><td>4.4</td><td>AM</td><td>30</td><td>0.999</td><td>AM</td></tr>
<tr><td>11</td><td>7.399</td><td>AM</td><td>⋮</td><td>⋮</td><td>⋮</td></tr>
<tr><td>12</td><td>7.4</td><td>AM</td><td>⋮</td><td>1MHz steps</td><td>⋮</td></tr>
<tr><td>13</td><td>12.299</td><td>AM</td><td>⋮</td><td>⋮</td><td>⋮</td></tr>
<tr><td>14</td><td>12.3</td><td>AM</td><td>59</td><td>29.999</td><td>AM</td></tr>
<tr><td>15</td><td>14.1</td><td>AM</td><td></td><td></td><td></td></tr>
</table></td><td></td></tr>
<tr><td>2</td><td>Memory check</td><td>① Check the stored contents of the memory channels on the LCD display.
② When the set is ON, measure the voltages at the contacts of CD21 and R61.</td><td>Memory contents are as set.
3VDC or more</td></tr>
<tr><td>3</td><td>TUNE voltage adjustment</td><td>① Connect the digital voltmeter to TP3.
② Select memory channel 2 (0.4MHz).
Adjust RV2 so that the voltmeter indicates 5.74VDC.
③ Select memory channel 3 (0.799MHz).
Adjust RV1 so that the voltmeter indicates 20VDC.
④ Repeat steps ② and ③ two or three times to confirm that the ratings are as specified.
⑤ If, in step ②, the voltage cannot be adjusted to 5.74V, adjust R50 and R51.
⑥ Select memory channel 21 (30.1MHz).
Adjust RV10 so that the voltmeter indicates 1.9VDC.
⑦ Select memory channel 22 (107.9MHz).
Check that the voltmeter indicates 10VDC.</td><td>5.74 ± 0.1VDC
20 ± 0.1VDC
1.9 ± 0.1VDC
10 ± 0.1VDC</td></tr>
<tr><td>4</td><td>LCD check</td><td>① Press the DIMMER key to check that the illumination is dimmed.
② Turn ON the set while pressing and holding FUNC + DIMMER. Check that all segments light.</td><td></td></tr>
<tr><td>5</td><td>Switches</td><td>① Firmly operate the switches to check that they move smoothly when being pressed ON or OFF.
② Check that the appropriate LED or LCD display lights when the respective switch is pressed.</td><td></td></tr>
</table>

NO.	ITEM	ADJUSTING PROCEDURE	RATING
6	32.768kHz adjustment (CV1)	① Connect the frequency counter and frequency multiplier as illustrated below.  ② Adjust CV1 until the frequency is 32.768kHz. Be sure to allow at least 30 min. after turning ON the power before adjusting CV1.	32.767621kHz ~32.768379kHz

7-4 CGK-160 REF/DDS UNIT

NO.	ITEM	ADJUSTING PROCEDURE	RATING
1	20MHz adjustment	① Set P1 to TCXO OFF. ② Connect the frequency counter and RF voltmeter to TP3. ③ Adjust CV1 so that the frequency is 20MHz. ④ Check the output voltage.	20MHz±10Hz 0.12Vrms or more
2	2nd Local adjustment (70MHz)	① Connect the spectrum analyzer to TP5. ② Adjust T1, T2, and T3 so that the 70MHz component is maximum. ③ Check that the 60MHz and 80MHz components are 50dB lower than the 70MHz component. ④ Adjust T4 so that the 70MHz component is maximum. ⑤ Connect the RF voltmeter to TP5. ⑥ Check the output voltage.	 0.16Vrms or more
3	DDS output check	① Set the reception frequency to 1.499MHz. ② Connect the RF voltmeter to TP1 and check the output voltage.	0.015Vrms or more
4	10MHz output check	① Connect the frequency counter to TP12. ② Check that the frequency is 10MHz. ③ Connect the RF voltmeter to TP12. ④ Check the output voltage.	10MHz±15Hz 0.4Vrms or more
5	20MHz output check	① Connect the RF voltmeter to TP2 and TP4. ② Check the output voltages.	TP2: 0.12Vrms or more TP4: 0.17Vrms or more
6	BEEP output adjustment	① Connect the oscilloscope to TP10. ② Adjust RV3 so that, when the beep is output, the output voltage is 0.3Vp-p.	0.3Vp-p ± 0.03V
7	Line out adjustment	① RV1 and RV2 are adjusted in section 7-9.	

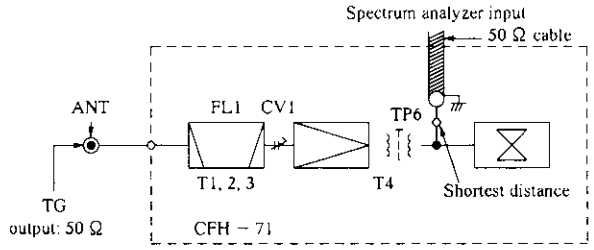
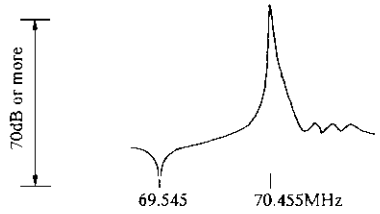
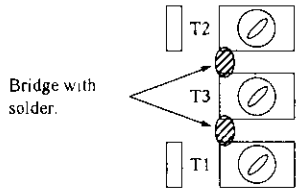
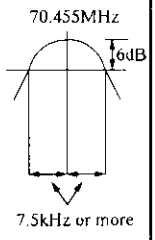
7-5 CGA-184 LOOP1 UNIT

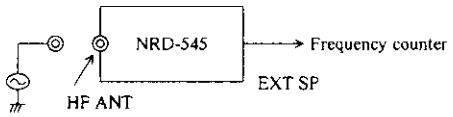
<table>
<tr><th>NO.</th><th>ITEM</th><th>ADJUSTING PROCEDURE</th><th>RATING</th></tr>
<tr><td>1</td><td>AVR adjustment</td><td>① Connect the digital voltmeter (DCV) to TP4.
② Check that the voltage is 9.6V.
If the voltage is not 9.6V, adjust it by replacing R52 and R62 with different values.</td><td>9.6 ± 0.3VDC</td></tr>
<tr><td>2</td><td>60MHz tuning</td><td>① Connect the RF voltmeter to TP5.
② Adjust T1 to the maximum output.</td><td>0.4Vrms or more</td></tr>
<tr><td>3</td><td>57MHz tuning</td><td>① Connect the RF voltmeter to TP6.
② Set the reception frequency to 1.250MHz and select AM mode.
③ Adjust T2 to the maximum output.
④ Connect the frequency counter to TP6.
⑤ Check that the output frequency is 57.705MHz.</td><td>0.042Vrms or more
57.705MHz
± 100Hz or less</td></tr>
<tr><td>4</td><td>VCO adjustment</td><td>① Connect the digital voltmeter (DCV) to TP1.
② Switch the receiving frequency according to the following table and adjust the VCO control voltage.
<table>
<tr><th>Receiving frequency</th><th>Adjustment trimmer</th><th>Control voltage</th></tr>
<tr><td>7.499MHz</td><td>CV1</td><td>7.5V ± 0.1Vdc</td></tr>
<tr><td>14.499MHz</td><td>CV2</td><td>7.5V ± 0.1Vdc</td></tr>
<tr><td>21.499MHz</td><td>CV3</td><td>7.5V ± 0.1Vdc</td></tr>
<tr><td>29.999MHz</td><td>CV4</td><td>7.5V ± 0.1Vdc</td></tr>
</table>
③ Make sure the lock-out does not take place at the receiving frequency ranging from 100kHz to 29.999MHz.
④ Check that CD11 lights when in the unlocked state while switching bands. Make sure that CD11 also turns OFF immediately.</td><td></td></tr>
<tr><td>5</td><td>Unit operating level check</td><td>① Use the RF voltmeter to check operating levels. TP3</td><td>0.1Vrms or more</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

7-6 CDA-752 DSP UNIT

NO.	ITEM	ADJUSTING PROCEDURE	RATING
1	Level adjustment	① Connect the oscilloscope to terminal 21 of P16 and to TP7. Select memory channel 12 and set AGC OFF. ② Input an unmodulated signal to the antenna connector and set the signal so that the voltage at terminal 21 of P16 is 1.1Vp-p. ③ Now adjust RV1 so that the voltage at TP7 is 2.08Vp-p.	2.08Vp-p ± 0.15V
2	AGC voltage check	① Connect the voltmeter to TP6. Select memory channel 12 and measure the voltage when no signal to the antenna connector. ② Connect the voltmeter to TP9. Select memory channel 23 and measure the voltage when no signal to the antenna connector.	AGC1 4.8 ± 0.3V AGC2 0.3 ± 0.2V

7-7 CFH-71 1ST IF UNIT

NO.	ITEM	ADJUSTING PROCEDURE	RATING
1	70.455MHz BPF adjustment (T1 to T4, and CV1)	① Connect a tracking generator (TG) as illustrated below.  ② Adjust CV1 and T4 so that the 70.455MHz point is maximum. ③ Adjust T1, T2, and T3 so that the 6dB bandwidth is ± 7.5kHz. Adjust T1 and T2 so that it is flat within the band. Adjust T3 to adjust the bandwidth. ④ Repeat step ②. ⑤ Adjust T1 and T2 so that the 69.545MHz point is at maximum attenuation. Now reduce the input ATT of the tracking generator so that attenuation is easier to see at the 69.545MHz point.  Adjust T1 to maximize attenuation at the 69.545MHz point. Adjust T2 so that the maximum point of attenuation is at 69.545MHz. ⑥ Check the 6dB bandwidth and band ripple. Repeat steps ③ to ⑤ if not within ratings. If the dip at the 69.545MHz point is not clear, check the following:  ⓐ Bridge the shield case of T2 and T3 with solder. ⓑ Bridge the shield case of T3 and T1 with solder. ⓒ Bridge the shield case of T2 and T3 and of T3 and T1 with solder.	 Band ripple 2dB or less
2	2nd MIX injection level	① Connect the RF voltmeter to TP7 and adjust T6 to the maximum level.	RF voltmeter: 0.7 to 1.3Vrms
3	Signal system tuning (T4 and T5)	① Connect the RF voltmeter to TP8 of CFH-71. ② Select 7.4MHz, CW mode, INTER bandwidth, and AGC OFF. ③ Set the SG output level to 5dBμ and connect to ANT connector. ④ Set the RF GAIN to maximum and adjust T4 and T5 so that the AF output is maximum ⑤ Check the TP8 voltage when the SG output level is set at 60dBμ .	0.45Vrms ± 0.10Vrms

NO.	ITEM	ADJUSTING PROCEDURE	RATING
4	RTTY demodulator filter adjustment	① Connect the SG and frequency counter as illustrated below.  SG (50 Ω): 7.104MHz 60dBμV CW Reception frequency: 7.104MHz MODE: RTTY BANDWIDTH: WIDE AGC: ON TONE control: Center position ② Set RV1 to the center position and RV2 and RV3 fully clockwise. ③ Connect CH1 of the oscilloscope (dual-channel) to TP4 and CH2 to TP5. ④ Fine tune the SG frequency or reception frequency so that the EXT SP output is 2295Hz. ⑤ Adjust RV4 so that the TP4 output level is maximum. Now, the output level is saturated. Rotate RV1 clockwise so that the output level is not saturated. ⑥ Set the shift width to 170Hz (± 85Hz). ⑦ Fine tune the SG frequency or reception frequency. ⑧ Adjust RV5 so that the TP5 output level is maximum. ⑨ Repeat steps ⑥ , ⑦ , and ⑧ to adjust 1870Hz and 1445Hz space filters. Space filter / Shift width / Adjuster (VR) 1870Hz / 425Hz / RV6 1445Hz / 850Hz / RV7	→Check that the MARK (CD8) LED is ON. →Check that the SPACE (CD9) LED is ON.

NO.	ITEM	ADJUSTING PROCEDURE	RATING
	Mark and space filter output level differential adjustment	⑩ Set the shift width to 425Hz. Fine tune the SG frequency or reception frequency so that the EXT SP output frequency is 2295Hz or 1870Hz. Adjust RV2 or RV3 so that the output levels of TP4 and TP5 are identical. Now, make sure RV2 and RV3 are set closer to the fully clockwise position. ⑪ Adjust RV1 so that the output level of TP4 and TP5 is 8Vp-p.	Level differential: 0.5Vp-p or less 8Vp-p ± 0.5V
	Fine tuning check	⑫ With the settings in step ⑩, set the TONE control fully clockwise or counterclockwise and check the shift range of the space filter around 1895Hz.