

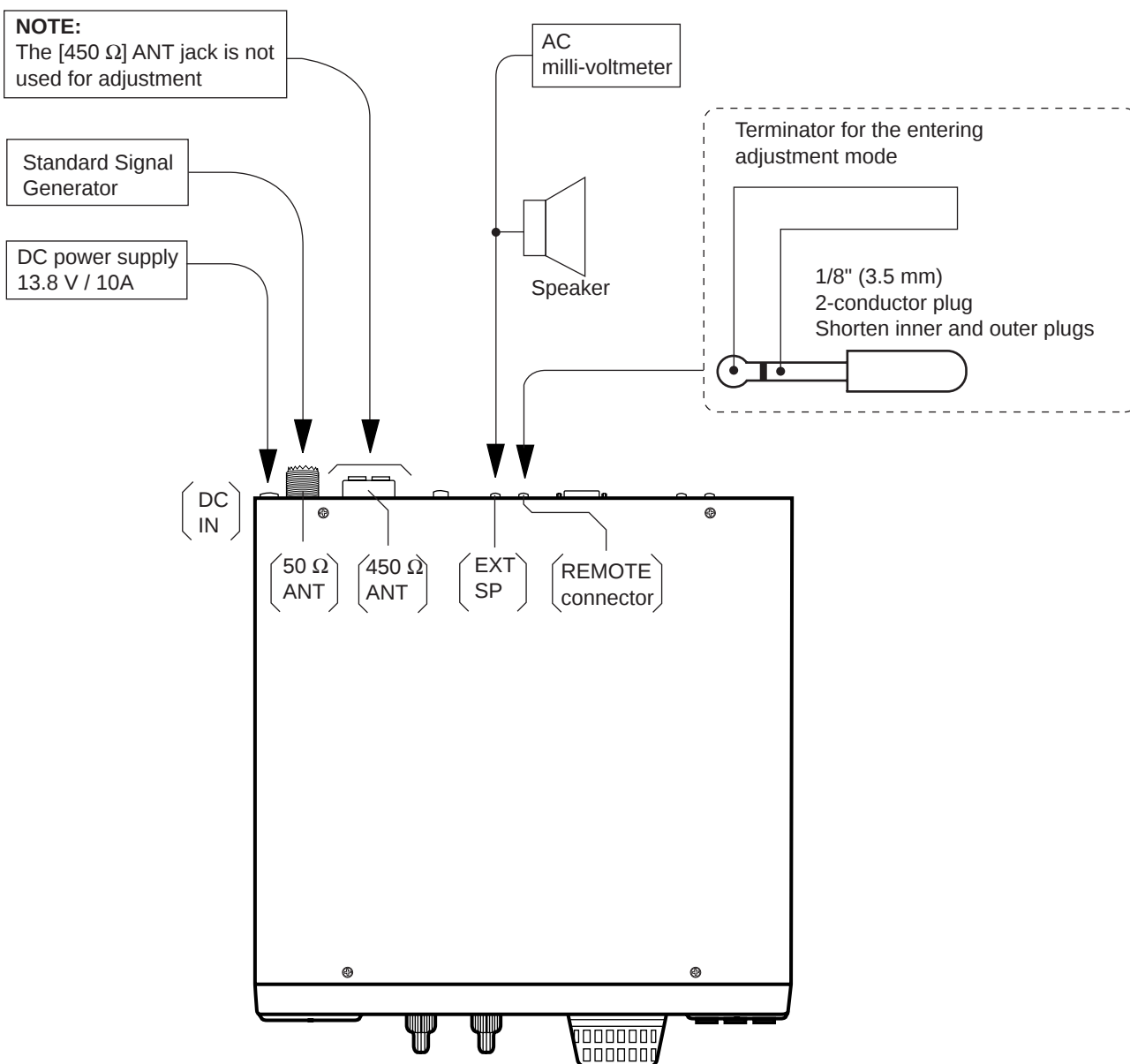
SECTION 4 ADJUSTMENT PROCEDURES

4-1 PREPARATION

■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.8 V DC Current capacity : 2 A or more	Oscilloscope	Frequency range : DC–20 MHz Measuring range : 0.01–20 V
Frequency counter	Frequency range : 0.1–60 MHz Frequency accuracy : ± 1 ppm or better Sensitivity : 100 mV or better	AC millivoltmeter	Measuring range : 10 mV–10 V
Audio generator	Frequency range : 0.1–60 Hz Measuring range : 0.01–10 mV	External speaker	Input impedance : 8 Ω Capacity : 4 W or more
DC Voltmeter	Input impedance : 50 k Ω /V DC or better	Standard signal generator (SSG)	Frequency range : 0.1–300 MHz Output level : 0.1 μ V–32 mV (–127 to –17 dBm)

■ CONNECTION

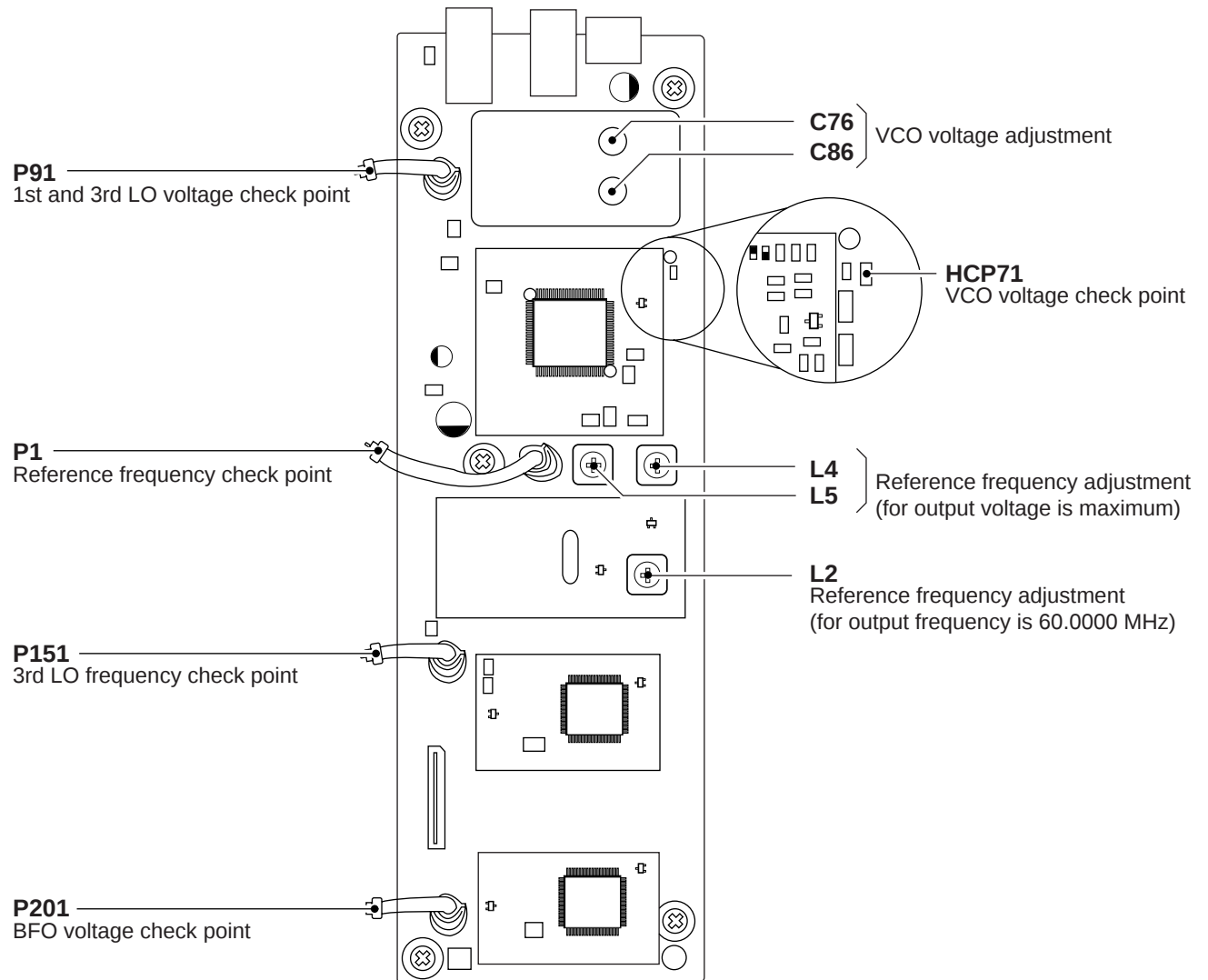


4-2 PLL ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
REFERENCE FREQUENCY	1	• Displayed frequency : 29.99999 MHz • Mode: USB	PLL	Connect the frequency counter to P1.	60.00000 MHz	PLL	L2
	2			Connect the RF voltmeter to P1.	Maximum voltage		L4, L5
VCO VOLTAGE	1	• Displayed frequency : 29.99999 MHz • Mode: USB	PLL	Connect the DC voltmeter to HCP71.	4.0 V	PLL	C86
	2	• Displayed frequency : 0.03000 MHz • Mode: USB			More than 0.8 V		Verify
	3	• Displayed frequency : 60.00000 MHz • Mode: USB			4.0 V	PLL	C76
	4	• Displayed frequency : 30.00000 MHz • Mode: USB			More than 0.8 V		Verify
1ST LO VOLTAGE	1	• Displayed frequency : 30–60.00000 MHz • Mode: USB	PLL	Connect the RF voltmeter to P91.	More than 0.18 V		Verify
3RD LO VOLTAGE	1	• Displayed frequency : 30–60.00000 MHz • Mode: USB	PLL	Connect the RF voltmeter to P91.	More than 0.022 V		Verify
3RD LO FREQUENCY	1	• Displayed frequency : 9.4615 MHz • Mode: FM	PLL	Connect the frequency counter to P151.	9.4614–9.4616 MHz		Verify
BFO VOLTAGE	1	• Displayed frequency : 14.100000 MHz • Mode: USB	PLL	Connect the RF voltmeter to P201.	More than 0.022 V		Verify
	2	• Displayed frequency : 14.100000 MHz • Mode: AM			Less than 280 μ V		

*This output level of the standard signal generator (SSG) is indicated as SSG's open circuit.

• PLL UNIT

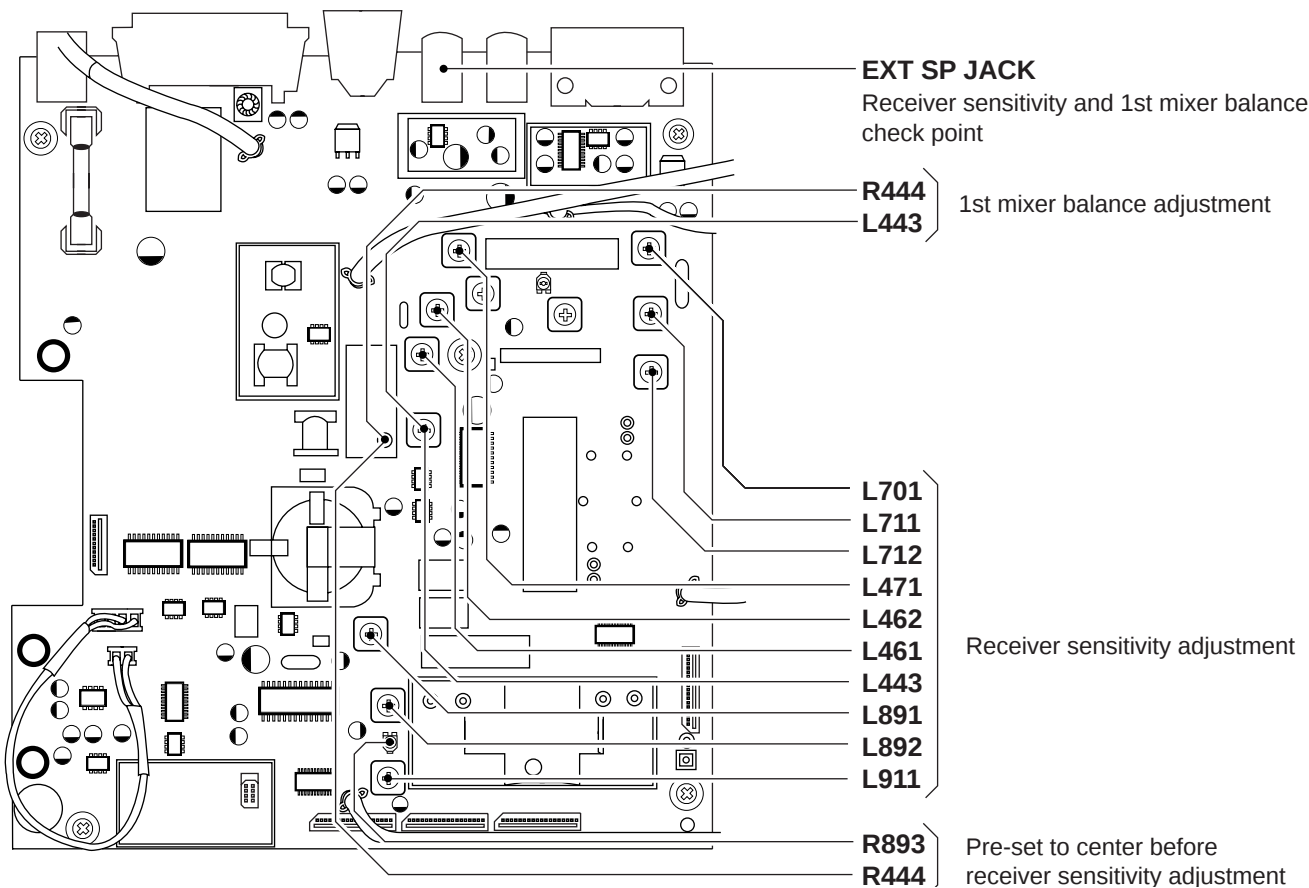


4-3 RECEIVER ADJUSTMENTS

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
RECEIVER SENSITIVITY	1	• Displayed frequency : 14.10000 MHz • Mode : USB • PREAMP1 : ON • ANT select : ANT1 • AGC : FAST • NOISE BLANKER : OFF • RF/SQL : CENTER • PBT1/PBT2 : CENTER • IF FILTER1 : 2.4 kHz • IF FILTER2 : 2.4 kHz	Rear Panel	Connect the AC milli-volt meter to the [EXT SP] jack with an 8 Ω load.	Pre-set to center	MAIN	R444 R898
	2	• Connect an SSG to the antenna connector1 and set as: Frequency : 14.10150 MHz Level : 22 μV* (−13 dBμ) • Modulation : OFF • Receiving			Maximum output level		L443, L461, L462, L471, L701, L711, L712, L891, L892, L911
1ST MIXER BALANCE	1	• Displayed frequency : 0.10000 MHz • PREAMP1 : OFF • set an SSG level as : OFF • Receiving	Rear panel	Connect an oscilloscope to the [EXT SP] jack with 8 Ω load.	Minimum noise level	MAIN	L443, R444

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• MAIN UNIT

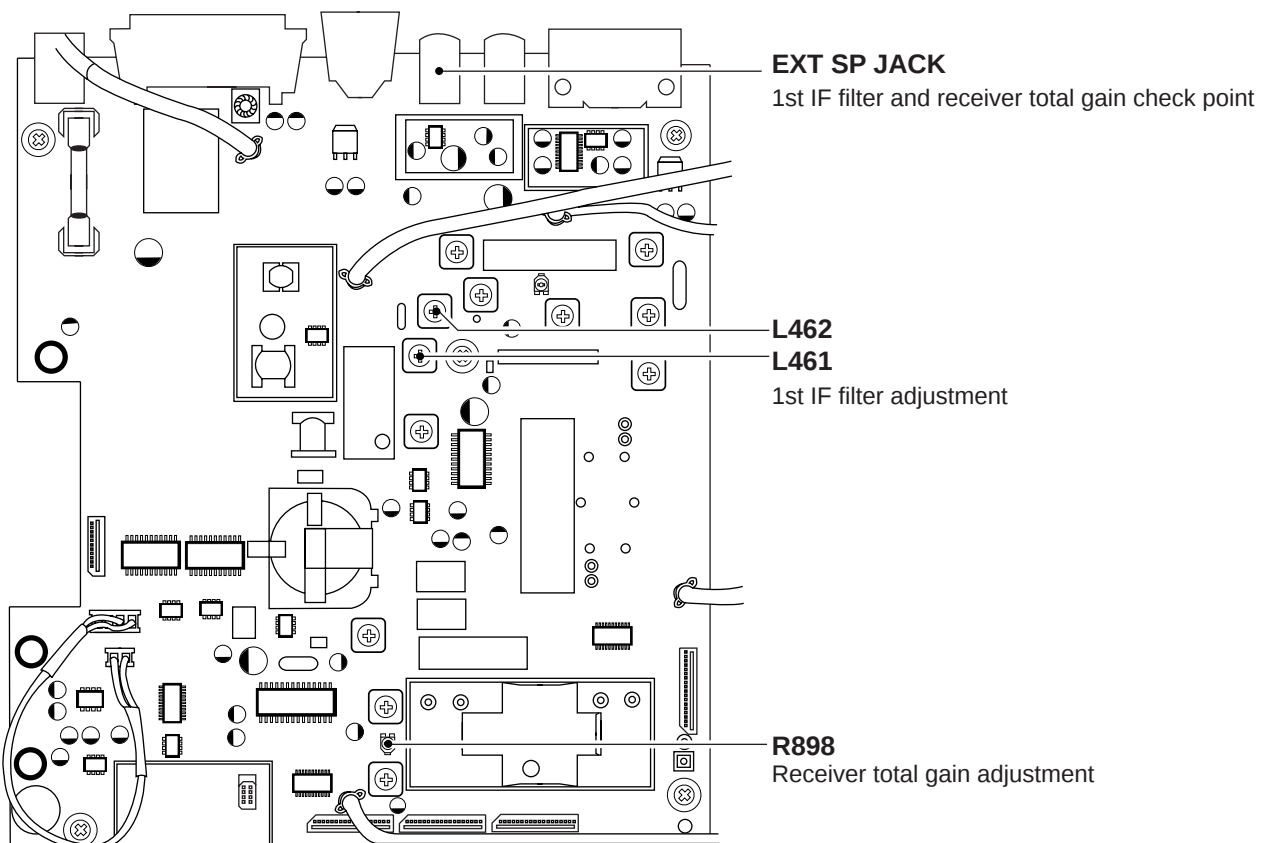


RECEIVER ADJUSTMENTS (continued)

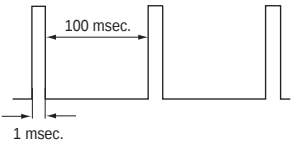
ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
1ST IF FILTER	1 - Displayed frequency : 14.10000 MHz - Mode : FM - PREAMP1 : ON - IF FILTER1 : 15 kHz - IF FILTER2 : 6 kHz - set an SSG as - Frequency : 14.10000 MHz - Level : 0.32 μV* (-10 dBμ) - Deviation : $\pm$3.5 kHz - Modulation : 1 kHz - Receiving	Rear panel	Connect the AC milli-volt meter to the [EXT SP] jack with an 8 Ω load.	Maximum output level	MAIN	L461, L462
RECEIVER TOTAL GAIN	1 - Displayed frequency : 14.10000 MHz - Mode : USB - PREAMP1 : OFF - IF FILTER1 : 2.4 kHz - IF FILTER2 : 2.4 kHz - Set an SSG as - Frequency : 14.10150 MHz - Level : 500 μV* (54 dBμ) - Modulation : OFF	Rear panel	Connect the AC milli-volt meter to the [EXT SP] jack with an 8 Ω load.	0 dB (1.0 V)	Front panel	[AF GAIN] control
	2 - Set an SSG level as : OFF - Receiving			-30 dB (10 mV)	MAIN	R898

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• MAIN UNIT

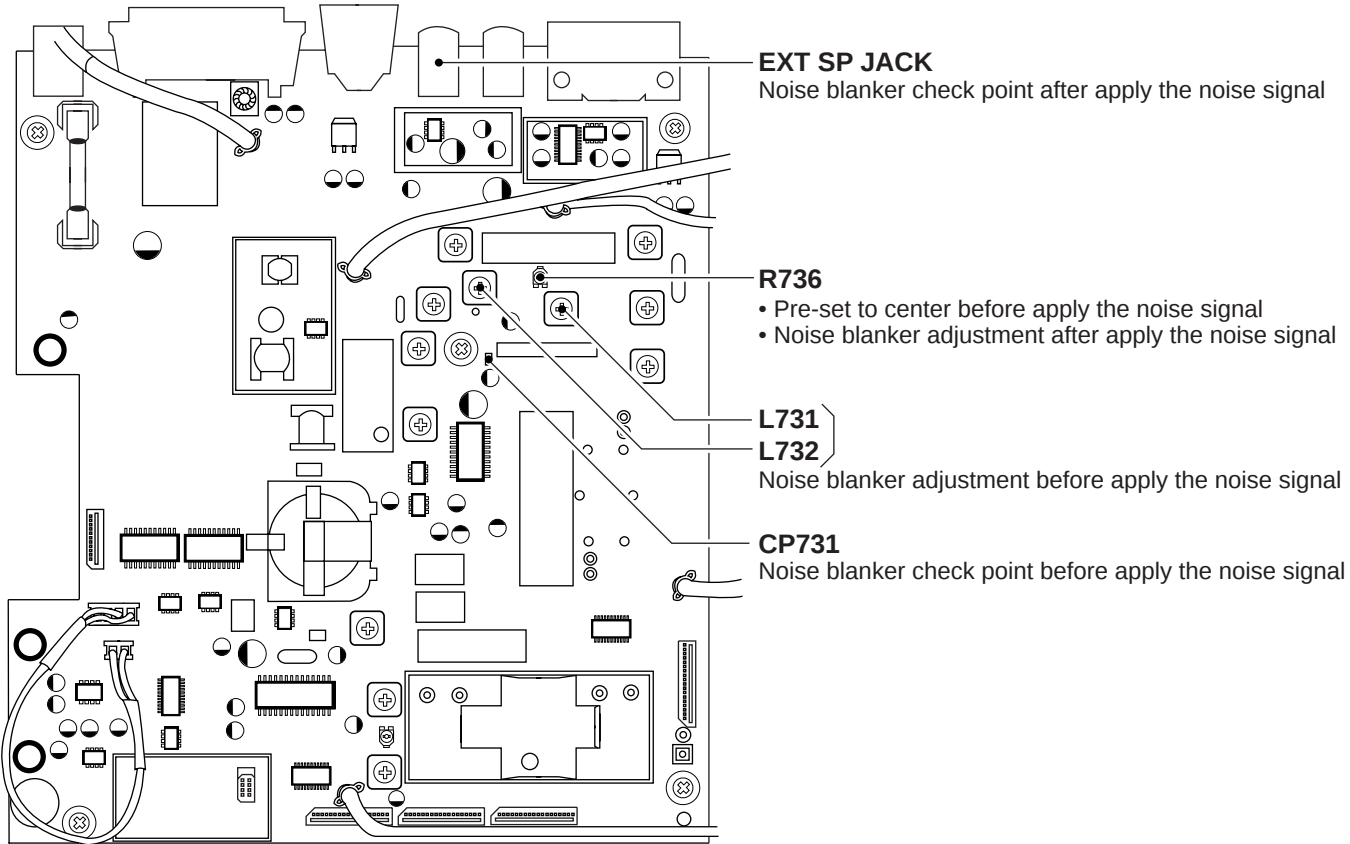


RECEIVER ADJUSTMENTS (CONTINUED)

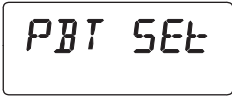
ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
NOISE BLANKER	1 • Displayed frequency : 14.10000 MHz • Mode : USB • Noise Blanker : OFF • PREAMP1. : ON • Set an SSG as - Frequency : 14.10000 MHz - Level : 18 μV* (25 dBμ) - Modulation : OFF	MAIN	Connect the oscilloscope to the check point CP731.	Pre-set to center Minimum voltage	MAIN	R736 L731, L732
	2 • Apply the following signal to the [ANT1] connector 	Rear Panel	Connect the oscilloscope to the [EXT SP] jack with an 8 Ω load.	Noise is blanked when the [NB] switch is ON.	MAIN	R736

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• MAIN UNIT



4-4 SET MODE ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITION	DISPLAY	OPERATION
ENTERING ADJUSTMENT SET MODE	• Turn power OFF • Connect a terminator to the [REMOTE] connector on the rear panel. • While pushing “SET[ANT]” and “CLOCK” keys, and turn power ON.		• When success entering adjustment set mode, shown “PBT SET” on the display. • Then advance to the following setting, or push “UP” key to scroll the display.
PBT VOLUME	1 • Connect an SSG to the antenna connector1 and set as: Frequency : 14.15150 MHz Level : 50 mV* (-13 dBm) Modulation : OFF • Preset both the inner and outer “TWIN PBT” controls to 12 o'clock position. • Receiving		• Push “SET[ANT]” key.to set the PBT level. • When the PBT level is true, shown “GOOD” on the display.
S-METER	1 • Set an SSG level as : OFF		• When S0 level of S-meter adjustment mode entering, displayed “S0 LV”. • Push the “SET[ANT]” key to set the S0 level.
	2 • Set an SSG level as : 35 μV* (31 dBμ)		• When S9 level of S-meter adjustment mode entering, displayed “S9 LV”. • Push the “SET[ANT]” key to set the S9 level.
	3 • Set an SSG level as : 28 mV* (89 dBμ)		• When +60 dB level of S-meter adjustment mode entering, displayed “+60 LV”. • Push the “SET[ANT]” key to set the 60 dB level.
	4		• When the S-meter adjustment is end, displayed “END”.
FILTER CALIBRATION	1 • Set an SSG level as : 10 μV* (20 dBμ)		• When filter calibration adjustment mode entering, displayed “FIL CAL”. • Push the “SET[ANT]” key to set the filter calibration. • Emit to the beep audio.
	2 • Turn power OFF to exit the adjustment set mode.		

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