IC-M302 ADJUSTMENT PROCEDURES

1 PREPARATION

■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.8 V DC Current capacity : 10 A or more
RF power meter (terminated type)	Measuring range : 1–50 W Frequency range : 100–300 MHz Impedance : 50 Ω SWR : Less than 1.2 : 1
Frequency counter	Frequency range : 0.1–300 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better
FM deviation meter	Frequency range : 30–300 MHz Measuring range : 0 to ±10 kHz
DC voltmeter	Input impedance : 50 kΩ/V DC or better
Distortion meter	Frequency range : 1 kHz ±10 % Measuring range : 1–100 %
Audio generator	Frequency range : 300–3000 Hz Measuring range : 1–500 mV
Standard signal generator (SSG)	Frequency range : 0.1–300 MHz Output level : 0.1 µV–32 mV (–127 to –17 dBm)
External speaker	Input impedance : 4 Ω Capacity : 5 W or more
Attenuator	Power attenuation : 40 or 50 dB Capacity : 50 W or more

2 PLL ADJUSTMENTS

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
LOCK VOLTAGE	1	• Operating channel : ch16 • Receiving	MAIN	Connect a digital multi-meter or oscilloscope to the check point LV.	1.8 V		Verify
	2	• Operating channel : ch16 • Output power : Low • Transmitting			1.6 V		
REFERENCE FREQUENCY	1	• Operating channel : ch16 • Output power : Low • Connect an RF power meter or a 50 Ω dummy load to the antenna connector. • Transmitting	Rear Panel	Loosely couple the frequency counter to the antenna connector.	156.8000 MHz	MAIN	C257

3 TRANSMITTER ADJUSTMENTS

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
OUTPUT POWER	1	• Operating channel : ch16 • Output power : High • Transmitting	Rear Panel	Connect an RF power meter to the antenna connector.	23.5 W	MAIN	R135
FREQUENCY DEVIATION	1	• Operating channel : ch16 • Output power : Low • Connect an audio generator to J2 (pin 3) on the MAIN unit with an AC millivoltmeter and set as: Frequency : 1 kHz Level : 40 mV • Set an FM deviation meter as: HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P–P)/2 • Transmitting	Rear Panel	Connect an FM deviation meter to the antenna connector through an attenuator.	±4.3 kHz	MAIN	R184

4 RECEIVER ADJUSTMENTS

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
SENSITIVITY	1	• Operating channel : ch16 • [SQUELCH] control: Max. counterclockwise • Connect an SSG to the antenna connector and set as: Frequency : 156.800 MHz Level : 1 µV* (–107 dBm) Modulation : 1 kHz Deviation : ±3.0 kHz • Receiving	MAIN	• Connect the distortion meter to the [EXT SP] jack with a 4 Ω load. • Connect a DC voltmeter to the check point RSSI.	Maximum voltage	MAIN	L6, L7, L8, L9

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