Adjustment for IC-F621

ADJUSTMENT						
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point	
Preparation Check points		Connect the transceiver by cloning cable (OPC-1122) to a PC (IBM compatible) and boot up the cloning software. Be sure to use a tester with more than 50 kohm/V internal resistance when making each test.				
Lock Voltage Adjustment		Set the transceiver to the 440 MHz and set so that the LV voltage is C133 during RX and C134 during TX. <table><tr><td>Adj. Freq.</td><td>440 MHz</td></tr><tr><td>RX Side</td><td>1.0V</td></tr><tr><td>TX Side</td><td>1.1V</td></tr></table>	1.0V 1.1V	C133 C134	LV	
Lock Voltage Check		Set the transceiver to the 490 MHz and check that all is within specification. <table><tr><td>Adj. Freq.</td><td>490 MHz</td></tr><tr><td>RX Side</td><td>3.3V~4.5V</td></tr><tr><td>TX Side</td><td>3.3V~4.5V</td></tr></table>	3.3V-4.5V 3.3V-4.5V		LV	
Frequency Adjustment		Connect a power meter or attenuator to the antenna terminal. Loose coupling the antenna terminal and frequency counter. Set the transceiver to near the TX greatest high band frequency and set the unit to TX. Use adjustment software to adjust the TX frequency to the values below. <table><tr><td>Set Frequency</td><td>Set Freq. ± 500 Hz</td></tr></table>	±500Hz	Adj.Soft TXF	ANT Con	

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Adjustment	No.	Adjustment Condition & Tuning	Value	Ref.No.	CK. Point
TX Output		Use adjustment software to adjust the adjustment output to the values below. 	Adj. Freq.	Greatest Low Band Freq.
Hi Power	45.0W
L2 Power	25.0W
L1 Power	4.5W		45.0W 25.0W 4.5W	Adj.Soft Power Hi L2 L1	ANT Con
TX Output Check		Check that the in-band TX output is within the specifications below. 	Hi Power	36.0~54.0W
L2 Power	20.0~30.0W
L1 Power	3.6~5.4W		36-54W 20-30W 3.6-5.4W		ANT Con
Current Check at TX		Check that the in-band power consumption is within the specifications below. | Hi Power	Less than 13.0A		Less 13A		
Checking Spurious		Connect a spectrum analyzer to the ANT terminal through an attenuator. Set the attenuation so that the spectrum Analyzer does not distort. Set the transceiver to TX and when at Hi power, check that spurious is less than the value below in the bandwidth. | Spurious	Less than −70dB of the fundamental wave		Less than -70 dB		ANT Con

ADJUSTMENT					
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref.No.	CK. Point
Preparation for Checking Modulation Adjustment		When there is no particular set limits, set the modulation analyzer for adjustment and checking as below. 	HPF	OFF
LPF	20 kHz
De-Emphasis	OFF
Detector	(P ± P)/2	 Connect the modulation analyzer set at the above conditions, through the attenuator to the antenna terminal. Connect an oscilloscope, distortion meter and a level meter to the modulation analyzer's detection output terminal. Connect a millivolt meter or a 600 ohm output impedance CR oscillator to the transceiver's mic terminal.			
Modulation Balance Adjustment		Use the adjustment software to adjust the modulation analyzer's detection output horizontal line so that it becomes a Straight line as below | Adjust. Freq.	Near Center Frequency		Detection Output	Adj.Soft Balance	ANT Con
Deviation Adjustment		Set the CR oscillator to a 1 kHz sine wave, 40mVrms, and input from the external mic terminal. Set the transceiver to TX and use the adjustment software to adjust to the following values. 	Adjust. Freq.	Near Center Frequency
WIDE	± 4.10 ± 0.05 kHz
NARROW	± 2.10 ± 0.05 kHz		± 4.05 ~ ±4.15kHz ± 2.05 ~ ±2.15kHz	Adj.Soft MOD W MOD N	ANT Con
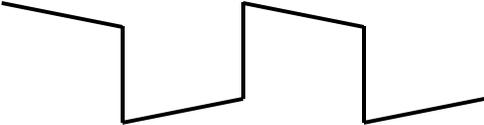
ADJUSTMENT					
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point
Checking Deviation		Check that the deviation in the bandwidth is as the values below. 	WIDE	± 3.60 ~ 4.50 kHz
NARROW	± 1.80 ~ 2.30 kHz		± 3.6 ~ ±4.5kHz ± 1.8 ~ ±2.3kHz		ANT Con
Checking Modulation		Check that the modulation in the bandwidth is as the value below | WIDE/NARROW	2.8 ~ 6 mV rms | WIDE:±3 KHz DEV ; NARROW:±1.5 KHz DEV	2.8-6mV rms		ANT Con
CTCSS Deviation Adjustment		Connect a linear detector via the attenuator to the antenna terminal, Set the transceiver to wide ch and CTCSS 88.5Hz. Transmit while making sure no input is applied to the mic (or mic terminal) 	Adjust. Freq.	Near Center Frequency
WIDE	± 0.7 kHz		±0.7kHz	Adj.Soft CTCS/DTCS	ANT Con

Checking CTCSS/ DTCS/2/5 TONE/ DTMF DEVIATION		then reset so that each signaling type can be output.
		    DTCS CODE 007
		    CTCSS 88.5 Hz
		    5 TONE CCIR 11111
		    DTMF # (Auto Dial Setting)
		    2 TONE 349.0 Hz
		
		check that each version in it's bandwidth is as the values below, respectively.
		
			Wide CTCSS/DTCS	± 0.50~± 0.90kHz

Wide 2/5 TONE/ DTMF	± 2.40~± 3.60kHz
Narrow CTCSS/DTCS	± 0.25~± 0.45kHz
Narrow 2/5 TONE/ DTMF	± 1.20~± 1.80kHz		±0.5-0.9kHz ±2.4-3.6kHz ±.25-.45kHz ±1.2-1.8kHz		ANT Con

ADJUSTMENT					
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref.No.	CK. Point

Checking TX S/N		Connect a linear detector via the attenuator to the antenna terminal, and set to the conditions below.
		
		     HPF 50 Hz
		     LPF 20 kHz
		     De-emphasis OFF
		     Level Meter (P/P)/2
		
		Apply a 1 kHz signal from the low frequency oscillator to the mic terminal, and transmit, then adjust the low frequency oscillator output level so that the maximum modulation is 70%.(WIDE:3.5KHz,NAR:1.75KHz) Check that the TX S/N in the bandwidth is as the values below.
		
		<table><tr><td>WIDE</td><td>More than 40 dB</td></tr><tr><td>NARROW</td><td>More than 34 dB</td></tr></table>
			Over 40dB
			Over 34dB
					ANT Con

Adjusting RX Sensitivity		When there is no particular set limits, set the RX adjustments and signal generator when checking to the settings below. <table><tr><td>Modulation Freq.</td><td>1kHz</td></tr><tr><td>WIDE</td><td>± 3.5 kHz</td></tr><tr><td>NARROW</td><td>± 1.75 kHz</td></tr></table> Set the signal generator in the following way for wide channels. <table><tr><td>Adjust Freq.</td><td>Near Greatest Lo band F.</td></tr><tr><td>SG Input level</td><td>+20 dBu</td></tr></table> Connect an 4 ohm non-inductive load and a distortion meter to the external speaker terminal. Adjust BPF (T1) ~ (T4) with the adjustment software, so that the sensitivity is at maximum.		Adj.Soft	RSSI line

ADJUSTMENT						
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point
Checking RX Sensitivity		Check that the signal generator level when the RX frequency bandwidth becomes 12 dB SINAD, is the value below. | RX Sensitivity	Less than -10 dBu | Use the same check method for Narrow channels also.	Less-10dB		ANT Con SP Jack
Adjusting the S3 LEVEL		This Adjustment is after the RX Sencitivity Finish. Set the signal generator in the following way for wide channels. 	Adjust Freq.	Near Greatest Lo band F.
SG Input level	+23 dBu
Modulation Freq.	1kHz
WIDE	± 3.5 kHz	 S3 SET COMMAND with the Adjustment soft Ware.	Adj.Soft S-METER S3 Level		ANT Con
Adjusting the S1 LEVEL		Set the signal generator to the settings below. | SG Output Level	-7 dBu | S1 SET COMMAND with the Adjustment soft Ware.	Adj.Soft S-METER S1 Level		ANT Con

ADJUSTMENT					
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point
Adjusting the Squelch		set the transceiver to the RX frequency bandwidth's narrow band center frequency. Set the signal generator to the settings below. 	Modulation Freq.	1kHz
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WIDE	± 3.5 kHz
NARROW	± 1.75 kHz
SG Output Level	-14 dBu	 In this condition, using the adjustment software, raise the squelch D/A value until the squelch closes once, then lower the D/A value again, and adjust until the squelch opening point.		Adj.Soft SQL	ANT Con
Checking Squelch Sensitivity		Check that the squelch opening point value in the RX frequency bandwidth is as below. 	Squelch Sensitivity	Less than -10 dBu
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Adjusting the Squelch		set the transceiver to the RX frequency bandwidth's narrow band center frequency.			

ADJUSTMENT					
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point
Checking AF Output		Set the signal generator output level to +60 dBu. The transceiver and SG connection is the same as the squelch adjustment above. Adjust the transceiver volume until the distortion meter reads 5%. Check that the AF output value at this point as below. 	AF Output	More than 3.5 W		Over 3.5 W @ 4 ohm load		ANT Con SP Jack
Checking RX S/N		Set the signal generator output level to +60 dBu. Adjust the AF volume so that the AF output is 50% of the rated value. Check that the RX S/N in the bandwidth is as the values below. | WIDE	More than 40 dB		NARROW	More than 34 dB		Over 40dB Over 34dB		ANT Con SP Jack
Checking Howling		Set the signal generator output to +60 dBu as in RX adjustment, and for non modulation. set the internal speaker for operation, and turn the AF volume up to maximum to check that howling does not occur.			ANT Con Int SP
Checking Maximum RX Current		While still in the AF output check status, rotate the volume control clockwise to obtain the maximum AF output. Check that the current consumption at this time is as the value below. 	Max. RX Current	Less than 1200 mA		Less than 1200mA		PWR Con