

ALIGNMENT PROCEDURE

FC401-1

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I. VCO Alignment			
No.	Item	Alignment Method	Remarks
1.1	Check connection	Power On the FC401-1 radio, Connect the serial port and run the testing software, Set the base frequency to be 450MHz, Channel 1 to frequency 453.325MHz and channel 2 to 468MHz.	
1.2	Tx VCO	1). To check the voltage VT at the resistor R15, Adjust the voltage VT of channel 1 to be $0.9 \pm 0.2V$, the Oscillation frequency to be 453.325MHz. Adjust the voltage VT of channel 2 to be $3.6 \pm 0.2V$, the Oscillation frequency to be 468MHz. 2). Adjust the capacitor VC2 to make the adjacent channel rejection to be greater than 65dB and Oscillation amplitude to be $0 \pm 3dB$.	
1.3	Rx VCO	1). To check the voltage VT at the resistor R4, Adjust the voltage VT of channel 1 to be $0.9 \pm 0.2V$ and the Oscillation frequency to be 428.6MHz. Adjust the voltage VT of channel 2 to be $3.6 \pm 0.2V$, the Oscillation frequency to be 446.6 MHz. 2). Adjust the capacitor VC1 to make the adjacent channel rejection to be greater than 65dB and Oscillation amplitude to be $0 \pm 3dB$.	
II. Single Board Alignment			
2.1	Tx alignment	1). Adjust VC3 to make the frequency error to be within $\pm 150Hz$. 2). Adjust VR1 to make the power at capacitor C220 to be greater than 100 mW. 3). Adjust VRC1 to make the MSK frequency deviation to be $3.0 \pm 0.2KHZ$.	
2.2	Rx alignment	1). Adjust L105 and L106 to assure AF amplitude to be $210 \pm 20mV$, Distortion to be $\leq 3\%$ and the LED of the radio is green. 2). Check if AF amplitude is less than 20% of the amplitude in normal test. 3). Adjust L101-L106 to make Sinad $\geq 12dB$. 4). Adjust VR3, make the SQ open (Sinad $\geq 12dB$), SQ close (Sinad $< 12dB$).	
III. The Radio Alignment			
3.1	Tx alignment	1). Adjust VC3 to make the frequency error to be within $\pm 150Hz$. 2). Adjust VR1 and L202 to make the power \leq	

		4W (between 1.8W to 2W)	
		3). Adjust VRC1 to make the MSK frequency deviation to be 3.0±0.2KHZ.	
3.2	Rx alignment	1). Adjust L105 and L106 to assure AF amplitude to be 210±20mV, Distortion to be ≤3% and the LED of the radio is green.	
		2). Check if AF amplitude is less than 20% of the amplitude in normal test.	
		3). Adjust L101–L106 to make Sinad ≥12dB.	
		4). Adjust VR3, make the SQ open (Sinad ≥12dB), SQ close (Sinad <12dB).	