## VX-210V Alignment

The VX-210 has been carefully aligned at the factory for the specified performance across the frequency range specified for each version. Re-alignment should therefore not be necessary except in the event of component failure, or altering version type. All component replacement and service should only be performed by an authorized Yaesu representative, or the warranty policy may be void.

### Required Test Equipment

- Yaesu CT-42 Programming Cable with CE-29 Channel Programming Diskette
- RF Signal Generator with calibrated output level at 200 MHz
- Deviation Meter (Linear Detector)
- AC Voltmeter
- SINAD Meter
- In-Line wattmeter with 5 % accuracy at 200 MHz
- Regulated DC Power Supply adjustable from 4 to 10 V, 3 A
- 50Ω Non-reactive Dummy Load: 10 W at 200 MHz
- Frequency Counter: ±0.2 ppm accuracy at 200 MHz
- AF Signal Generator
- DC Voltmeter: high impedance

Before beginning alignment, connect the transceiver and PC using the CT-42 Programming Cable, and run the CE-29 Channel Programming Diskette, then download the EEPROM data from the transceiver to the computer.

Then store this data in a disk file so that it can be uploaded when alignment is finished.

You should find the corresponding data file on the computer disk for the transceiver version you are aligning, containing channel settings for the high edge, middle and low edge of the transceiver's frequency range in channels 1, 2 and 3, respectively. Up-load this file to the transceiver.

Low Band Edge (Channel 1): 148.000 MHz

Band Center (Channel 2): 160.000 MHz

High Band Edge (Channel 3): 174.000 MHz

### PLL & Transmitter

Set up the test equipment as shown for transmitter alignment. Adjust the supply voltage to 7.2 V for all steps where not specified otherwise.

*PLL VCV (Varactor Control Voltage)*

- ❒ Connect the DC voltmeter between **TP03** on the chip side of the Main Unit and ground.
- ❒ Set the transceiver to CH 3 (high band edge), and adjust **L1004** on the chip side of the Main Unit for 4.0 V ± 0.1 V on the voltmeter.
- ❒ Set the transceiver to CH 1 (low band edge), and confirm the low-end VCV is more than 0.8 V while transmitting, and also while receiving.

*PLL Reference Frequency*

- ❒ Set the transceiver to CH 2 (band center), key the transmitter and adjust **TC1001** on the component side of the Main Unit, if necessary, so the frequency counter displays the band center frequency ±100 Hz (for the version being aligned) when transmitting.

*Transmitter Output Power*

- ❒ Set the transceiver to CH 2 (band center), and select high power output.
- ❒ Ensure that the supply voltage is precisely 7.2 V, then adjust **VR1004** on the component side of the Main Unit (while the PTT switch is pressed) for 5.0 W on the wattmeter, and confirm that supply current remains below 2.0 A.

*Modulation Level*

- ❒ Set the transceiver to CH 2 (band center), adjust the AF generator for 77 mVrms output at 1 kHz to the MIC jack.
- ❒ Press the PTT switch and adjust **VR1002** on the component side of the Main Unit for a deviation of ±4.2 kHz (for 25 kHz steps), or ±2.1 kHz (for 12.5 kHz steps).

**Receiver**

Set up the test equipment as shown for receiver alignment.

*Sensitivity*

- ❒ Set the transceiver to CH 3 (high band edge), and the RF signal generator tuned to the same frequency, set the generator for ±3.0 kHz deviation with 1 kHz tone modulation, and set the output level for 40 μV at the antenna jack.
- ❒ Adjust **VR1001** on the component side of the Main Unit for optimum SINAD, and confirm that signal generator level should be better than –7 dBμ for 12 dB SINAD.

*RSSI*

- ❒ Connect the DC voltmeter between **TP43** on the component side of the Main Unit and ground.

- ❒ Set the transceiver to CH 2 (band center), and the RF signal generator tuned to the same frequency, set the generator for ±3.0 kHz deviation with 1 kHz tone moderation, and set the output level for 15 dBμ at the antenna jack.
- ❒ Adjust **VR1005** on the component side of the Main Unit for 0.7 V ± 0.1 V on the voltmeter.

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