



JOCK LEUNG

HARMAN KARDON CITATION TWENTY-THREE TUNER

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As part of the recently revived Citation line of premium-grade components, Harman Kardon has developed an innovative AM/FM tuner, the Citation Twenty-Three. The FM section of the tuner features an unusual circuit design, called Active Tracking, to provide exceptional selectivity when needed without sacrifice of any audible performance qualities during normal operation.

In a conventional FM tuner, selectivity—the ability to discriminate

against interference from signals removed in frequency by one or two channels from the desired station—is provided by band-pass filters in the intermediate-frequency (IF) amplifier. Today's tuners use ceramic filters that require no adjustment. The bandwidth of an FM tuner's IF section must be at least 150 kHz to pass a fully modulated signal without distortion, and it is usually somewhat greater than that. Most tuners are able to reject signals 400 kHz from the desired one (alternate

channels) without difficulty, but adjacent channels (200 kHz away) can present a severe problem. Typical adjacent-channel selectivity measurements are in the 3- to 5-dB range, which in practical terms means that the tuner simply cannot reject such interference effectively.

Some tuners have narrow-band filters that can be switched into the circuit when needed, but these typically introduce a large phase shift and amplitude change near the outer limits of the filter pass-band, causing significantly higher distortion and degraded channel separation and capture ratio. Harman Kardon's solution to the problem is the Active Tracking system. When high adjacent-channel selectivity is needed, the usual IF filtering system is augmented by a phase-locked

