

1.1 PRODUCT DESCRIPTION

The EUT is a hand held portable scanning receiver capable of receiving signals from 0.1 to 2000MHz. The EUT has an AC charging adapter, a speaker port, and a PC interface port. Signals in the 0.1 to 449.99 MHz and 1500 to 2000 MHz bands are converted into the 736.25 MHz first IF signal by the first local oscillator signal. Signals in the 450 to 1499.99 MHz band are converted into the 275.45 MHz 1st IF signal by this same 1st local oscillator signal. The 1st IF signal is converted into the 45.05 MHz 2nd IF signal from the two 2nd local oscillator signals (671.2 and 230.4 MHz) by the second mixer circuit. Depending on the mode, the 2nd IF signal is input to one of the two IF amplifier ICs. In one mode, the 2nd IF signal is mixed with a 34.35 MHz 3rd local oscillator signal and converted into a 3rd IF signal of 10.7 MHz, while in the other, it is mixed with a 44.595 MHz 3rd local oscillator signal and converted into the 3rd IF signal of 455 kHz.

Receiver Block:

The received signal from the antenna goes through the antenna circuits (D128, D124 and D125) and is screened by seven band pass filters consisting of several antenna switches (D131, D111, D127, D112, D126, D114, D130, D115, D134, D119, D135, D121, D136, D122 and D133) to remove unwanted signals. The RF signal is amplified by each of the RF amplifiers Q123 (0.1 to 222 MHz), Q125 (222 to 797 MHz), Q126 (797 to 2000 MHz) and Q118. It is then converted into the first IF signal by the first mixer circuit (T101, T100, and D116). The adjacent signals in first IF signal, the 275.45 MHz IF signal and the 736.25 MHz IF signal are filtered out respectively by the band switch (D110 and D102), the IF filter (L113, L110, L107 and L101) and the IF filter (FL102 and FL101). Then the signals are input into the second mixer circuit (Q102). In the second mixer circuit, the 12.8 MHz reference signal is mixed with either a 230.4 MHz second local oscillator signal (amplified 18 times) or a 691.2 MHz second local oscillator signal (amplified 54 times) selected by a switch (D101), and is converted into a 45.05 MHz second IF signal. In the WFM mode, the second IF signal goes through an IF filter (L301) and is input into pin No. 16 of an IF IC (IC305). A 10.7 MHz third IF signal converted by the IC's internal mixer is output from pin No. 14, filtered of adjacent signals by a ceramic filter (FL302) and input into pin No. 12. Next it is demodulated by IC's internal limiter amplifier and quadrature detection circuit, and output from pin No. 8 as an AF signal. In the NFM, AM, SSB and CW modes, the second IF signal goes through an IF filter (XF300 and XF301) and is input to pin No. 16 of an IF IC (IC304). A 455 kHz third IF signal converted by the IC's internal mixer is output from pin No. 3 and is filtered of adjacent signals by a ceramic filter (FL301). Thereafter, a switch (D306 and D309) selects the mode. In the NFM mode, the signal is input to pin No. 5, demodulated by IC's internal limiter amplifier and quadrature detection circuit, and output from pin No. 9 as an AF signal. In the AM mode, the signal is amplified by an AGC amplifier (Q313) and input to pin No. 7 of an IF IC (IC305). It is amplified inside the circuit, demodulated by the detection circuit and output from pin No. 8 as an AF signal. In the SSB mode, the signal goes through a ceramic filter (FL303) and is amplified by an AGC amplifier (Q313 and an IF amplifier (Q316). It is then mixed with a carrier signal, which is generated by the BFO circuit (X302 and Q318) and fed through a buffer (Q317), demodulated by a balanced modulation circuit consisting of diodes (Q315, D314 and D313), and output as an AF signal. The AF signal for each of the modes is selected with a switch (IC308) and amplified by an AF signal amplifier (IC309). It is controlled by an AF mute circuit (Q319) and adjusted for volume by an electronic volume (IC306). It is then amplified by an audio amplifier (IC307) and input to the speaker.

PLL Synthesizer Circuit:

The signal from a 12.8 MHz crystal (X100) oscillator circuit (Q100) is input to a PLL IC (IC101) to obtain a 10 MHz reference oscillation signal frequency. The comparison frequency is output from a VCO circuit (Q114, L108, D104, D105, D107 and D108), amplified by an amplifier (Q115, Q113 and Q116) and divided by a divider inside the PLL IC. It is then compared against the reference frequency to make the PLL synthesizer. The VCO output signal (675 to 1225 MHz) is amplified by a buffer amplifier (Q115, Q113 and Q120) and input into the first mixer as the first local oscillator signal.

Frequencies of 9 kHz steps or less are varied by the VCXO circuit (X300, D304 and D305) of the D/A converter (IC303).

1.2 RELATED SUBMITTAL(S)/GRANT(S)

N/A. This is an original submission for Type Acceptance Certification.

1.3 STATEMENT FROM THE MANUFACTURER IN SUPPORT OF FCC SECTION 15.121.

The EUT must be incapable of tuning or readily being altered by the user to operate within the frequency bands allocated to the domestic Public Cellular radio Telecommunication Service in part 22 of the Commissions rules and regulations. The manufacturer has included a statement in support of FCC 15.121.