HF Receiver

Design Features and Technical Data

Receiver Frequency Range	10 kHz . . . 30 MHz (−3 dB range) 1 kHz . . . 30 MHz tuning range
Tuning Resolution	10 Hz
Tuning Knob	128 steps/revolution, tuning speeds 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz
Time Base	TCXO at 40 MHz, ±0.28 ppm over commercial temperature range
Antenna Input	BNC, 50 Ω
Input Attenuator	switchable, 0 dB, 20 dB
IF Frequencies	86.85 MHz and 10.7 MHz
Roofing Filter	25 kHz bandwidth SAW filter at first IF
IF Bandwidths	three crystal IF filters, electronically switched, at 10.7 MHz (2.7 kHz, 10 kHz, 12 kHz bandwidth)
Demodulation Modes	AM synchronous SSB (upper and lower sideband)
BFO	
Offset range	±3.5 kHz
Tuning resolution	1 Hz
Gain Control	
Modes	automatic (fast, slow, hang), manual
Range	≈ 120 dB distributed between first IF (−10 dB . . . + 30 dB) and second IF (0 dB . . . + 80 dB)

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Performance Test Results

AM Sensitivity $\leq -112\,\mathrm{dBm}$
for 10 dB SINAD
AM at 50 % depth with 1 kHz
bandwidth 3 (2.7 kHz)
attenuator out

SSB Sensitivity $\leq -122\,\mathrm{dBm}$
for 10 dB SINAD
input signal at 1 kHz offset from tuned frequency
bandwidth 3 (2.7 kHz)
attenuator out

Second Order Intercept Point $\geq 30\,\mathrm{dBm}$
$\Delta f = 100\,\mathrm{kHz}$ ($\geq 50\,\mathrm{dBm}$ with attenuator in)
antenna input referred, AGC off, attenuator out

Third Order Intercept Point $\geq 5\,\mathrm{dBm}$
$\Delta f = 100\,\mathrm{kHz}$ ($\geq 25\,\mathrm{dBm}$ with attenuator in)
antenna input referred, AGC off, attenuator out

Image Rejection $\geq 90\,\mathrm{dB}$
AGC off, attenuator out

IF Rejection $\geq 80\,\mathrm{dB}$
AGC off, attenuator out

LO Isolation $\leq -75\,\mathrm{dBm}$
measured at antenna input when terminated into 50 Ω
attenuator out
frequency range 56.85 MHz . . . 86.85 MHz

Return Loss $\geq 5\,\mathrm{dB}$ between 200 kHz and 30 MHz
measured at antenna input $\geq 12\,\mathrm{dB}$ between 200 kHz and 10 MHz
attenuator out ($\geq 25\,\mathrm{dB}$ with attenuator in)

Distortion $\leq 0.9\,\%$ THD
1 mV input signal with 30 kHz bandwidth
AM at 50 % depth with 1 kHz
attenuator out

SSB Unwanted Sideband Rejection $\geq 33\,\mathrm{dB}$
input signal at 1 kHz offset from tuned frequency
bandwidth 3 (2.7 kHz)

RSSI Readout Accuracy $\leq 3.5\,\mathrm{dB}$
bandwidth 3 (2.7 kHz) in the range from -100 dBm to -40 dBm
attenuator out
unmodulated carrier