

R-2368B(V)1/URR
RECEIVER

The R-2368B(V)1/URR is a high-performance, cost-effective, VLF/LF/MF/HF receiver covering the frequency range from 10 kHz to 30 MHz in 1 Hz increments. Using modern microprocessor control technology, this receiver provides the operational features required for the professional communicator, while still maintaining the "touch" of the familiar tuning controls of older designs. The excellent RF performance of the R-2368B(V)1/URR receiver, as exhibited by the superb intermodulation, reciprocal mixing characteristics, and frequency agility, complement the unit's control features in providing state-of-the-art communications capability.

The ability to enter and store up to 100 channels from the front panel or over remote control, makes the R-2368B(V)1/URR a versatile communications tool for surveillance, networking, or general purpose receiving. Each of the 100 channels may be programmed for frequency, mode, IF, BW, BFO, FSK and AGC settings. The channels may be scanned at variable rates, either sequentially or in programmed groups, with the capability of being selected by the automatic scan control feature. An internal FSK Demodulator is also provided.

The receiver contains a comprehensive built-in test equipment (BITE) network, which allows extensive microprocessor-controlled self-testing to isolate faults at the modular level. Surveillance BITE monitors the RF input, the power supply, and the frequency stability.

Manual tuning and channel selection is activated via a front panel keypad or tuning knob. Operating parameters such as detection mode, filter bandwidth (typically: CW – 0.3 kHz, AM – 6 and 16 kHz, USB/LSB – 2.7 kHz, and FM – 16 kHz), and AGC mode (Slow, Medium, Fast, Data, and Manual) are pushbutton selectable.

Receiver operating parameters and self-testing results are displayed on two front-panel numeric and alphanumeric displays. Full remote control capability is accomplished with an internal remote control system compatible with MIL-STD-188C, EIA Standard RS-232C, or RS-422 formats.

The rear panel contains 50 ohm connectors for RF antenna input; filtered 455 kHz IF output, unfiltered 455 kHz; ISB output; 5 MHz frequency standard inputs; and frequency standard output, local control lines, and other functions. The receiver is supplied with rack mount kit including rack shock pins and shock blocks.

The R-2368B(V)1/URR offers a fully solid-state design with all components substantially derated for long-term, dependable operation. This basic design concept coupled with an extensive BITE self-diagnostics capability and modular packaging, result in rapid maintenance by personnel with limited training.

The self-check sequence is automatically performed by momentarily pressing the TEST button located on the front panel. Normal length of the self-test for all assemblies is five seconds with all tests performed sequentially following the RF signal path. If it is determined that a fault exists in a particular assembly, that assembly number and the corresponding fault code number defining the type of failure are indicated on the receiver's front-panel alphanumeric display. Because of the BITE system and modular equipment design, demonstrated MTTR is less than ten minutes.

Specifications for the R-2368B(V)1/URR

Electrical		COR/Squelch	Carrier Operated Relay with front panel adjustable level set. Optional squelch threshold control.
Frequency Range	10 kHz to 29.999999 MHz	Phase Stability	Typically no greater than 2 degrees. Fully meets Link-11 data requirements.
Frequency Resolution	1 Hz increments	Intermodulation	In-Band: -50 dB or better for two 100 mV (-7 dBm) signals within the IF passband. Out-of-Band: $<10 \text{ dB } (S + N) \div N$ for two -5 dBm signals removed $>10\%$ from tuned frequency
Tuning	Continuous, with lockout, with seven selectable ranges and keypad entry.	Cross Modulation	-20 dB or better for 500 mV 30% modulated interfering signals removed 20 kHz or greater from the desired signal of 10 μV .
Tuning Time	Tuning time between any two frequencies is less than 20 msec	Reciprocal Mixing	The apparent noise appearing at the receiver input, when in a 3 kHz bandwidth, caused by a 0 dBm signal 100 kHz off tune, is less than 1.0 μV (-107 dBm).
MTBF	Greater than 6215 hours demonstrated per MIL-STD-781C	Quieting	Ultimate $(S + N) \div N$: 50 dB
Frequency Stability		Spurious Responses	Image and IF: -100 dB; Spurious: Internal less than -121 dBm equivalent except for seven less than -101 dBm equivalent; External: -80 dB.
Internal Standard	1 part in 10^8 - OVEN	AGC	Range: $<3 \text{ dB}$ audio output variation for 1 μV to 1 V signal range. (Threshold internally adjustable from 0.5 to 5 μV).
Frequency Standard	Input: 5 MHz, 0.5 VRMS; Output: 5 MHz, 0.5 VRMS/50 ohms (daisy chain feature with automatic frequency standard switchover)	Time Constants;	Attack Time: $<20 \text{ msec}$; Hang and Decay Time: Short $<35 \text{ msec}$, Medium $200 \pm 50 \text{ msec}$, Long $2.5 \pm 0.5 \text{ secs}$;
Channel Memory	100-channel capacity capable of being loaded locally or remotely with complete receiver parameters. Retention of operational parameters without power is provided for one month minimum	Audio Outputs	Data: Link-11 compatible Manual: 125 dB range
Scanning	Scan any set of consecutive channel numbers (channel scan) or any of ten preprogrammed sets of random channel numbers (group scan)	IF Outputs	Phone: +15 dBm/600 ohms/5% distortion Line Output: -20 to +15 dBm, -26 dB distortion, (optional +10 dBm 600 ohm balanced)/ Hum and Noise: less than 50 dB. Pass Band Ripple: 3 dB max (optional internal speaker).
Automatic Scan Control	Allows receiver to automatically stop scanning when a received signal exceeds a predetermined threshold. Scanning will resume automatically when the signal falls below the threshold or may be selected to maintain the frequency.	Built-in Test Diagnostics	455 kHz (filtered and unfiltered)
Readout/Display	Receiver frequency, BFO frequency, channel assignment mode, IF/BW/filters, AGC, BITE, dwell, scan, group, FSK parameters	Remote Control	Fault isolation to LRU with front-panel alphanumeric indication
BFO	10 Hz synthesized tuning $\pm 9.99 \text{ kHz}$		An internal microprocessor-based system capable of accepting asynchronous serial data using the following formats: MIL-STD188C, EIA Standard RS-232C and RS-422. Remote Control protocol may be Harris proprietary or ASCII. Remote control function allows interface to the RF-7700NT Command and Control System, or other control equipment. Remote Control Functions: Frequency, Channel Select, IF BW, Mode, AGC-TC, BFO, Fault-BITE Status, Scan Select, RF Gain, AF Gain, RF and Audio Level Status, and Channel Load, FSK Demod.
Internal Preselector	Digital operation, 20 dB attenuation $\pm 10\%$ off frequency		
Maximum Signal Input	Receiver protected for up to 100 watts at the antenna input		
Modes of Operation	LSB, USB, 2-channel ISB, AM, CW, FM; Optional: 4-channel ISB, FSK with internal modem or external modem		
Link-11/TADIL-A Operability	With Delay-Compensated Filters		
Sensitivity	For 10 dB $(S + N) : N$ radio		
CW:	0.2 μV , 50 kHz – 30 MHz 1.0 μV , 14 kHz – 50 kHz 1.6 μV , 10 kHz – 14 kHz		
AM	2.5 μV , 50 kHz – 30 MHz		
SSB:	0.6 μV , 50 kHz – 30 MHz 3.0 μV , 14 kHz – 50 kHz		
IF Bandwidths	Standard supplied		
Mode	3 dB BW (kHz)		
CW	0.15, 0.3, 1.0		
AM	6.0/16.0		
FM	16.0		
USB	300 – 3050 Hz		
LSB	300 – 3050 Hz		
ISB (each channel)	300 – 3050 Hz		
		Installation	
		Power Requirements	115/230 VAC $\pm 20\%$, 47 – 420 Hz, 90 watts max.
		Size	Rack mount and desk mount capability 5.25H x 19W x 19.5D (less front panel projections) inches max. (13.3H x 48.3W x 49.5D cm)
		Weight	40 lbs (18.5 kg)
		Environmental	
		Vibration	MIL-STD-167-1, Type 1
		Shock	MIL-S-901; Grade A, Class 1, Lightweight, Type A (hard mount)
		Temperature	Operating: -10°C to +55°C Non-Operating: -62°C to +71°C
		Humidity	0 to 95%

Specifications are subject to change without notice.