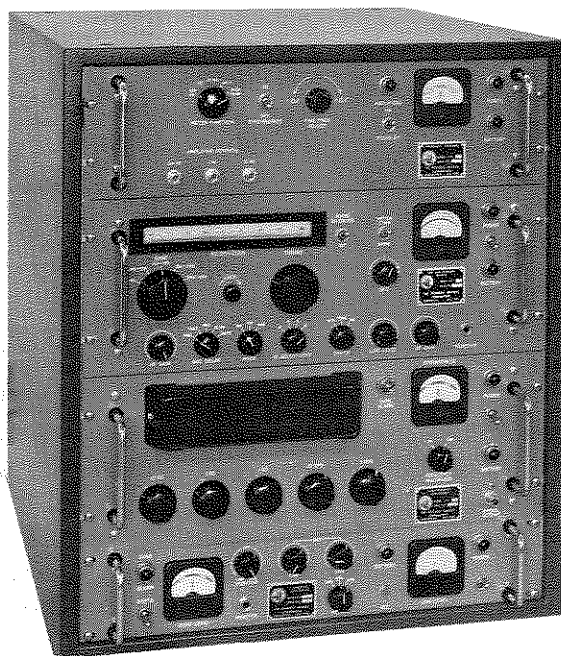




## TECHNICAL BULLETIN NUMBER 3011A

LF/MF Receiver System  
TMC Model LRRR-1  
LRRB-1



Model LRRB-1

- 30 to 600 kcs
- Electronically switched standby battery supply
- 1 part in  $10^9$  stability
- AFC
- Completely solid state
- CW, FSK, SSB, ISB, AM and AME

This entirely new solid state receiver from The Technical Materiel Corporation provides continuous coverage from 30 to 600 kcs for the reception of SSB, ISB, CW, AM, FSK and FAX signals. A frequency synthesizer, tunable in 1 cycle steps from 30 to 100 kcs and 10 cycle steps from 100 to 600 kc, provides 1 part in  $10^9$  stabilized frequency control for the receiver. Intelligibility outputs can be obtained from either the receiver or the included independent sideband converter/automatic frequency control unit.

Solid state and modular construction provides a compact receiver system of low power consumption which eliminates the necessity of forced air cooling and assures long term, trouble free operation. A "fail-safe" nickel cadmium battery supply is maintained on trickle charge during normal operation and is electronically switched to power the receiving system when main power fails.

Current LF/MF communication requirements for both fixed and mobile service are more than met by this modern receiver and the modular design allows complete flexibility to cope with future communication needs.

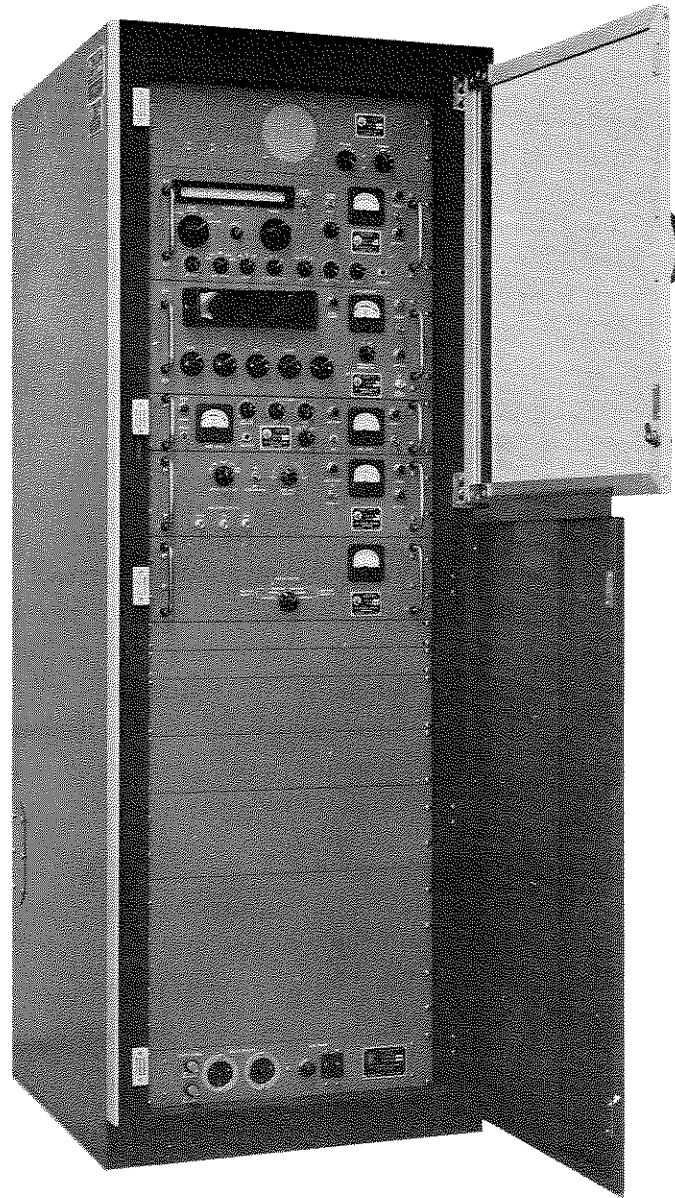
## LF/MF Receiver System

### TECHNICAL SPECIFICATIONS, TMC MODEL LRR( )

|   |  |
|---|--|
| FREQUENCY RANGE:  | 30 to 600 kc continuous, divided into front panel selectable tuning ranges of 30 to 55, 55 to 100, 100 to 180, 180 to 330, and 330 to 600 kc.  |
| MODES OF OPERATION:   | CW, FSK, SSB and AME over entire frequency range; AM and ISB from 55 to 600 kc.  |
| FREQUENCY STABILITY:  | 0.01% of the operating frequency after warm-up when the receiver is operating in the unsynthesized mode. When the receiver is stabilized by the synthesizer, the stability is 1 part in $10^9$ .   |
| INPUT IMPEDANCE:  | 50 ohms nominal.   |
| SENSITIVITY:  | With a bandwidth of 500 cycles, a 0.3 microvolt signal at the antenna terminals will produce a 15 db signal plus noise to noise ratio at the output of the audio amplifier.  |
| TUNING:   | The synthesizer is a direct reading digital type which tunes over the 30 to 100 kc range in one cycle steps and in ten cycle steps from 100 to 600 kc.   |
| RF BANDWIDTH:   | The RF bandwidth is a minimum of 3 kc on the lower band at 30 kc. On other bands starting at 55 kc, at least 8 kc bandwidth.   |
| IF SELECTIVITY:   | 0.5, 2, 4, and 8 kc at 3 db points, selectable from the front panel.   |
| IF NOISE SILENCER:  | A highly effective IF type noise silencer is included to remove impulse noise.   |
| IF OUTPUT:  | 1 volt across 50 ohms.   |
| AFC CHARACTERISTICS:  | The AFC will automatically synchronize to a received signal within $\pm 5$ cps and suppressed up to 25 db at a front end sensitivity of 1 microvolt and will remain synchronized within $\pm 300$ cps at 30 kcs. A built-in electronic memory circuit will maintain the tuning position through signal fades or momentary outages. |
| IMAGE RATIO:<br>(In accordance with<br>CCIR specifications) | HFO image is at least 80 db down when referenced to 0.1 microvolt input signal.  |

## TMC Model LRRRA-1, LRRB-1

- AGC CHARACTERISTICS:** With a 100 db variation in the input signal, the output remains constant within  $\pm 3$  db.
- AUDIO DISTORTION:** On standard two tone test, audio distortion will be at least 40 db down.
- AUDIO OUTPUT:**
1. 0 dbm output into a 600 ohm balanced center tapped line from VLRB-1 and from each channel of LFCA-1.
  2. 4 ohm output to drive a speaker,  $\frac{1}{2}$  watt average power output.
  3. Headphone monitor.
- HUM LEVEL:** Power supply hum at least 50 db below audio output.
- SIDEBAND CONVERTER:** The sideband converter extends the modes of operation of the basic receiver to include SSB and ISB. AM and ISB are limited to use on the upper four bands, due to bandwidth requirements. The individual bandwidth of each sideband can be controlled from the front panel. The sideband converter is complete with its own audio system.
- INSTALLATION DATA:**
1. LRRRA-1: 69" h  $\times$  24 $\frac{1}{4}$ " w  $\times$  30" d.  
536 lbs. with batteries,  
500 lbs. without batteries.
  2. LRRB-1: 31" h  $\times$  22" w  $\times$  20" d.  
Approximately 90 lbs.
- POWER SUPPLY:** Each unit contains an individual power supply requiring 115/230v, 50/60 cycle single phase primary power. Total power requirement 100 watts.
- BATTERY SUPPLY:**  
(Model BPSD-1) An electronically switched standby battery is supplied for four hour operation of the complete system. These batteries are automatically maintained at full charge under normal operating conditions.
- COMPONENTS AND CONSTRUCTION:** All equipment is manufactured in accordance with JAN/MIL specifications wherever practicable.
- OPTIONS/ACCESSORIES:** Priced separately.
- CFA-1L or CFA-2: Available for RF frequency shift keying teletype reception in either narrow or wide band modes.  
(See TB 4008 and 4008A)
- Shock Mounts: Cabinet shock mounts are available for shipboard and mobile installations.



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