Data Sheet LACR

# MOTOTRBO™ R7 portable two-way radios


MOTOTRBO R7 digital portable radios offer game-changing audio capabilities in a rugged, dependable and connected device. Its advanced audio processing ensures that your communications are loud and clear, while its rugged construction is ready for the toughest environments.

## Key features

- VHF, 350 MHz, UHF, 800/900 MHz
- Wi-Fi 2.4/5.0 GHz
- WPA3 Wi-Fi security protocol compliant
- Bluetooth® Core Version 5.2
- Digital and analogue signalling
- WAVE PTX™ Backup Client with Seamless Voice Handover
- 2.4" 320 x 240 px. QVGA display
- Modern, intuitive user experience
- Full suite of accessories
- Sleek and ergonomic form factor
- Automatic Acoustic Feedback Suppression
- Adaptive Dual Microphone Noise Cancellation
- AI-trained Noise Suppression
- Intelligent Audio
- IMPRES™ technology
- Programmable loudness up to 107 phons
- Wideband speaker and microphones
- Simple audio configuration
- Up to 28 hours of battery life[1]
- IP68 (waterproof up to 2 m for 2 hours)
- IP66 (concentrated water jet pressure)
- Intrinsically safe option (UL TIA-4950)
- Disinfectant and decontamination substance resistant housing[2]
- Robust and corrosion-proof side connector
- Rugged to MIL-STD 810

MOTOROLA SOLUTIONS

# Specifications

| GENERAL SPECIFICATIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | R7 FULL KEYPAD MODEL (FKP) | | | | R7 AND R7A NO KEYPAD MODEL (NKP) | | | |
| **Band** | **VHF** | **350 MHz** | **UHF** | **800/900 MHz** | **VHF** | **350 MHz** | **UHF** | **800/900 MHz** |
| Frequency | 136-174 MHz | 350-400 MHz | 400-527 MHz | 806-825 MHz, 851-870 MHz, 896-902 MHz, 935-941 MHz | 136-174 MHz | 350-400 MHz[6] | 400-527 MHz | 806-825 MHz, 851 -870 MHz, 896-902 MHz, 935-941 MHz |
| High Power Output | 5 W | 4 W | 4 W | 2.5 W | 5 W | 4 W | 4 W | 2.5 W |
| Low Power Output | 1 W | | | | | | | |
| Channel Spacing | 12.5 kHz, 20 kHz[6], 25 kHz | | | | | | | |
| Channel Capacity | 1,000 Channels | | | | 64 Channels | | | |
| Display | 2.4" 320 x 240 px. QVGA display, with up to 10 lines of text | | | | N/A | | | |
| FCC Description | AZ489FT7144 | N/A | AZ489FT7143 | AZ489FT7169 | AZ489FT7144 | N/A | AZ489FT7143 | AZ489FT7169 |
| Power Supply (Nominal) | 7.5 V | | | | | | | |
| **MOTOTRBO R7 WITH 2200 MAH SLIM IMPRES LI-ION BATTERY (PMNN4807)** | | | | | | | | |
| Dimensions (h x w x d) | 131.8 x 56 x 34.7 mm (5.2 x 2.2 x 1.4 in.) | | | | 131.8 x 56 x 31.3 mm (5.2 x 2.2 x 1.2 in.) | | | |
| Weight[3] | 316 g (11 oz) | | | | 289 g (10 oz) | | | |
| Digital / Analogue Battery Life[1] | 20 / 15 hrs | 19 / 14.5 hrs | 19 / 14.5 hrs | 19 / 15.5 hrs | 20 / 15 hrs | 19 / 14.5 hrs | 19 / 14.5 hrs | 19 / 15.5 hrs |
| Operating Temperature | -20 °C to 60 °C (-4 °F to 140 °F) | | | | | | | |
| **MOTOTRBO R7 WITH 2850 MAH IMPRES LI-ION BATTERY (PMNN4809)** | | | | | | | | |
| Dimensions (h x w x d) | 131.8 x 56 x 34.7 mm (5.2 x 2.2 x 1.4 in.) | | | | 131.8 x 56 x 31.3 mm (5.2 x 2.2 x 1.2 in.) | | | |
| Weight[3] | 333 g (12 oz) | | | | 306 g (11 oz) | | | |
| Digital / Analogue Battery Life[1] | 26 / 19.5 hrs | 25 / 19 hrs | 25 / 19 hrs | 25 / 20.5 hrs | 26 / 19.5 hrs | 25 / 19 hrs | 25 / 19 hrs | 25 / 20.5 hrs |
| Operating Temperature | -20 °C to 60 °C (-4 °F to 140 °F) | | | | | | | |
| **MOTOTRBO R7 WITH 3200 MAH IMPRES LI-ION BATTERY (PMNN4603)** | | | | | | | | |
| Dimensions (h x w x d) | 131.8 x 56 x 40.7 mm (5.2 x 2.2 x 1.6 in.) | | | | 131.8 x 56 x 37.3 mm (5.2 x 2.2 x 1.5 in.) | | | |
| Weight[3] | 366 g (13 oz) | | | | 339 g (12 oz) | | | |
| Digital / Analogue Battery Life[1] | 29 / 22 hrs | 28 / 21.5 hrs | 28 / 21.5 hrs | 27.5 / 22 hrs | 29 / 22 hrs | 28 / 21.5 hrs | 28 / 21.5 hrs | 27.5 / 22 hrs |
| Operating Temperature | -20 °C to 60 °C (-4 °F to 140 °F) | | | | | | | |
| **MOTOTRBO R7 WITH 3200 MAH HAZLOC IMPRES LI-ION BATTERY (PMNN4810)** | | | | | | | | |
| Dimensions (h x w x d) | 131.8 x 56 x 40.7 mm (5.2 x 2.2 x 1.6 in.) | | | | 131.8 x 56 x 37.3 mm (5.2 x 2.2 x 1.5 in.) | | | |
| Weight[3] | 366 g (13 oz) | | | | 339 g (12 oz) | | | |
| Digital / Analogue Battery Life[1] | 29 / 22 hrs | 28 / 21.5 hrs | 28 / 21.5 hrs | 27.5 / 22 hrs | 29 / 22 hrs | 28 / 21.5 hrs | 28 / 21.5 hrs | 27.5 / 22 hrs |
| Operating Temperature | -20 °C to 60 °C (-4 °F to 140 °F) | | | | | | | |

## HAZLOC CERTIFICATION

ANSI/TIA 4950 and CAN/CSA C22.2 No. 157-92 certified as intrinsically safe for use in Class I, II, III, Division 1, Groups C, D, E, F, G, Division 2, Groups A, B, C, D when properly equipped with Motorola UL-Approved battery

## MARITIME CERTIFICATION

R7 UHF models are maritime certified to EN 300 720 V2.1.1 and IEC / EN 60945:2002 standards for use on board vessels
R7 VHF models meet the requirements of FCC Rule Part 80 and ISED RSS-182 for maritime use on board ships

# Specifications

## TRANSMITTER SPECIFICATIONS

| | |
|---|---|
| FM Modulation | 12.5 kHz: 11K0F3E<br>20 / 25 kHz: 16K0F3E |
| 4FSK Digital Modulation | 12.5 kHz Data Only: 7K60F1D & 7K60FXD<br>12.5 kHz Data & Voice: 7K60F1E & 7K60FXE<br>Combination of 12.5 kHz Voice and Data: 7K60F1W |
| Digital Protocol | ETSI TS 102 361-1, -2, -3,- 4<br>DMR Tier II and DMR Tier III |
| Conducted/Radiated Emissions (TIA603E / ANSI C63.26, C63.4) | -36 dBm < 1 GHz<br>-30 dBm > 1 GHz |
| Adjacent Channel Power (TIA603E) | 60 dB @ 12.5 kHz<br>70 dB @ 20 kHz / 25 kHz |
| Frequency Stability | ± 0.5 ppm |
| Modulation limiting (TIA603E) | ± 2.5 kHz @ 12.5 kHz<br>± 4.0 kHz @ 20 kHz<br>± 5.0 kHz @ 25 kHz |

## RECEIVER SPECIFICATIONS

| | |
|---|---|
| Analogue Sensitivity (12dB SINAD) | 0.16 µV (0.21µV for 800/900 MHz model) |
| Digital Sensitivity (5% BER) | 0.14 µV (0.18µV for 800/900 MHz model) |
| Conducted Spurious Emissions (TIA603E) | < -57 dBm for < 1 GHz<br>< -47 dBm for > 1 GHz |
| Intermodulation (TIA603E) | 70 dB |
| Adjacent Channel Selectivity, (TIA603A)-1T | 60 dB @ 12.5 kHz<br>70 dB @ 20 kHz / 25 kHz |
| Adjacent Channel Selectivity, (TIA603D)-2T | 45 dB @ 12.5 kHz<br>70 dB @ 20 kHz / 25 kHz |
| Spurious Rejection (TIA603E) | 70 dB |

## GNSS SPECIFICATIONS

| | |
|---|---|
| Constellation Support | GPS, GLONASS, BEIDOU, GALILEO |
| Time To First Fix, Cold Start | ≤ 60 seconds |
| Time To First Fix, Hot Start | ≤10 seconds |
| Horizontal Accuracy | < 5 m |

## WI-FI SPECIFICATIONS

| | |
|---|---|
| Frequency Range | 2.4 GHz, 5 GHz |
| Standards Supported | Wi-Fi 5 / IEEE 802.11a/b/g/n/ac |
| Security Protocol Supported | WPA-3, WPA-2 |
| Roaming Protocol Supported | IEEE 802.11k/v/r |
| Maximum Number of SSIDs | 128 (64 for NKP Models) |

## SERVICE COVERAGE

| |
|---|
| Included: Technical support, software updates and premium features (5 years) |
| Optional: Hardware repair, accidental damage (5 years) |

## BLUETOOTH SPECIFICATIONS

| | |
|---|---|
| Bluetooth Technology | Bluetooth, Bluetooth Classic, Bluetooth LE, Bluetooth Dual Mode |
| Core Version | Qualified against Bluetooth Core 5.2 |
| Range | Class 2, 10 m (33 ft) |
| Supported Profiles | Bluetooth Headset Profile (HSP), Serial Port Profile (SPP), Personal Area Network (PAN), Generic Attributes (GATT), In-door location (Bluetooth LE Passive Scanning) |
| Simultaneous Connections | 1 audio accessory and up to 4 data devices |

## AUDIO SPECIFICATIONS

| | |
|---|---|
| Digital Vocoder Type | AMBE+2 |
| Audio Response (TIA603E / ANSI C63.26) | +1, -3 dB |
| Audio Output Power (Rated/Max) | 1 W / 3 W |
| Audio Distortion at Rated Audio | ≤1.5% |
| Maximum Speech Loudness by Default (ISO532B) | 102 phon @ 30 cm |
| Maximum Programmable Speech Loudness (Extra Loud Mode, Level 3) | 107 phon @ 30 cm |
| Hum and Noise | -40 dB @ 12.5 kHz<br>-45 dB @ 20 kHz / 25 kHz |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| Operating Temperature[4] | -30 °C to 60 °C (-22 °F to 140 °F) |
| Storage Temperature | -40 °C to 85 °C (-40 °F to 185 °F) |
| Thermal Shock | Per MIL-STD |
| Humidity | Per MIL-STD |
| Electrostatic Discharge | IEC 61000-4-2 Level 4 |
| Dust and Water Intrusion | IP68 (Submersion up to 2m, 2hrs)<br>IP66 for high pressure-water resistance per IEC 60529 |
| Salt Fog | 5% NaCl for 8 hrs at 35 °C, 16 hrs standing |
| Packaging Test | MIL-STD 810D and E |

## MILITARY STANDARDS

| | MIL-STD 810C | | MIL-STD 810D | | MIL-STD 810E | | MIL-STD 810F | | MIL-STD 810G | | MIL-STD 810H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | METHOD | PROCEDURE | METHOD | PROCEDURE | METHOD | PROCEDURE | METHOD | PROCEDURE | METHOD | PROCEDURE | METHOD | PROCEDURE |
| Low Pressure | 500.1 | I | 500.2 | II | 500.3 | II | 500.4 | II | 500.6 | II | 500.6 | II |
| High Temp | 501.1 | I, II | 501.2 | I/A1, II/A1 | 501.3 | I/A1, II/A1 | 501.4 | I/Hot, II/Hot | 501.6 | I/A1, II/A1 | 501.7 | I/A1, II/A1 |
| Low Temp | 502.1 | I | 502.2 | I, II | 502.3 | I, II | 502.4 | I, II | 502.6 | I, II | 502.7 | I, II |
| Temp Shock | 503.1 | I | 503.2 | A1/C3 | 503.3 | A1/C3 | 503.4 | I | 503.6 | I-C | 503.7 | I-C |
| Solar Radiation | 505.1 | II | 505.2 | I/A1 | 505.3 | I/A1 | 505.4 | I/A1 | 505.6 | I/A1 | 505.7 | I/A1 |
| Rain | 506.1 | I, II | 506.2 | I, II | 506.3 | I, II | 506.4 | I, III | 506.6 | I, III | 506.6 | I, III |
| Humidity | 507.1 | II | 507.2 | II | 507.3 | II | 507.4 | - | 507.6 | II/Aggravated | 507.6 | II/Aggravated |
| Salt Fog | 509.1 | I | 509.2 | I | 509.3 | I | 509.4 | - | 509.6 | - | 509.7 | - |
| Blowing Dust & Sand | 510.1 | I / - | 510.2 | I, II | 510.3 | I, II | 510.4 | I, II | 510.6 | I, II | 510.7 | I, II |
| Vibration | 514.2 | VIII/CatF, XI | 514.3 | I/Cat10, II/Cat3 | 514.4 | I/Cat10, III/Cat3 | 514.5 | I/Cat24, II/Cat5 | 514.7 | I/Cat24, II/Cat5 | 514.8 | I/Cat24, II/Cat5 |
| Shock | 516.2 | I, II | 516.3 | I, IV | 516.4 | I, IV | 516.5 | I, IV | 516.7 | I, IV | 516.8 | I, IV |
| Contamination by Fluids[2] | | | | | | | | | 504.2 | II | 504.3 | 2.2.6 b |

# Features

R7 is available with full keypad and no keypad versions.

| | R7 FULL KEYPAD Capable | R7 FULL KEYPAD Enabled | R7 NO KEYPAD Capable | R7 NO KEYPAD Enabled |
|---|---|---|---|---|
| **GENERAL** | | | | |
| VHF 5 W, UHF / 350MHz 4 W, 800/900 MHz 2.5 W | ● | ● | ● | ● |
| Full Keypad | ● | ● | – | – |
| Colour Screen | ● | ● | – | – |
| Analogue and Digital | ● | ● | ● | ● |
| Voice and Data | ● | ● | ● | ● |
| Integrated Wi-Fi | ● | ● | ● | ● |
| Canned Text Messaging | ● | ● | ● | ● |
| Freeform Text Messaging | ● | ● | – | – |
| Text to Speech | ○ | ○ | ○ | ○ |
| Work Order Ticketing | ● | ● | ● | ● |
| Indoor Location Tracking | ○ | ○ | ○ | ○ |
| Event-Driven Location Update[6] | ○ | ● | ○ | ● |
| Enable GPS/GNSS | ○ | ● | ○ | ● |
| Bluetooth Audio | ● | ● | ● | ● |
| Bluetooth Data | ○ | ● | ○ | ● |
| Voice Announcement | ● | ● | ● | ● |
| Home Channel Reminder | ● | ● | ● | ● |
| Late Entry | ● | ● | ● | ● |
| Priority Scan | ● | ● | ● | ● |
| Real-Time Clock | ● | ● | ● | ● |
| Audio Recording/Playback | ○ | ● | ○ | ● |
| Secure Linux Operating System | ● | ● | ● | ● |
| M-Radio Control App | ○ | ● | ○ | ● |
| WAVE PTX Backup Client[7] | ○ | ○ | ○ | ○ |
| **AUDIO** | | | | |
| Intelligent Audio in Analogue and Digital | ● | ● | ● | ● |
| IMPRES Audio | ● | ● | ● | ● |
| Received Audio Levelling | ● | ● | ● | ● |
| Automatic Acoustic Feedback Suppressor | ● | ● | ● | ● |
| Microphone Distortion Control | ● | ● | ● | ● |
| User-Selectable Audio Profile | ● | ● | ● | ● |
| Trill Enhancement | ● | ● | ● | ● |
| AI-trained Noise Suppression | ● | ● | ● | ● |
| Advanced Dual Microphone Noise Cancellation[5] | ● | ● | ● | ● |
| **SYSTEMS** | | | | |
| Dual Capacity Direct Mode | ● | ● | ● | ● |
| Conventional | ● | ● | ● | ● |
| IP Site Connect | ○ | ● | ○ | ● |
| Capacity Plus Single/Multi Site | ○ | ○ | ○ | ○ |
| Capacity Max | ○ | ○ | ○ | ○ |

| | R7 FULL KEYPAD Capable | R7 FULL KEYPAD Enabled | R7 NO KEYPAD Capable | R7 NO KEYPAD Enabled |
|---|---|---|---|---|
| **MANAGEMENT** | | | | |
| CPS 2.0 and Radio Management | ● | ● | ● | ● |
| Over-the-Air Programming (via DMR) | ● | ● | ● | ● |
| Over-the-Air Software Update (via Wi-Fi) | ● | ● | ● | – |
| IMPRES Energy | ○ | ○ | ○ | ○ |
| IMPRES Battery Management | ○ | ○ | ○ | ○ |
| Over-the-Air Battery Management | ○ | ○ | ○ | ○ |
| **SAFETY** | | | | |
| Emergency Button | ● | ● | ● | ● |
| Man Down / Fall Alert | ○ | ○ | ○ | ○ |
| Lone Worker | ● | ● | ● | ● |
| IP68 (waterproof up to 2 m for 2 hours) | ● | ● | ● | ● |
| IP66 (concentrated water jet pressure) | ● | ● | ● | ● |
| Rugged to MIL-STD 810 | ● | ● | ● | ● |
| Disinfectant / Decontamination Resistant[2] | ● | ● | ● | ● |
| Sensor Integration | ○ | ● | ○ | ● |
| Integrated Accelerometer | ● | ● | ● | ● |
| Basic Privacy | ● | ● | ● | ● |
| Enhanced Privacy | ○ | ● | ○ | ● |
| AES256 encryption | ○ | ○ | ○ | ○ |
| Transmit Interrupt | ○ | ● | ○ | ● |
| Digital Emergency | ● | ● | ● | ● |
| Emergency Search Tone | ○ | ○ | ○ | ○ |
| Remote Monitor | ○ | ○ | ○ | ○ |
| Radio Disable / Enable | ○ | ○ | ○ | ○ |
| Secure Processor | ● | ● | ● | ● |
| Digital Certificates | ● | ● | ● | – |
| **CUSTOMIZATION** | | | | |
| GCAI-Mini Accessory Port | ● | ● | ● | ● |
| 6 Programmable Buttons | ● | ● | – | – |
| 4 Programmable Buttons | – | – | ● | ● |
| Day/Night Screen Mode | ● | ● | – | – |
| Action List | ● | ● | – | – |
| Label Recess | ● | ● | ● | ● |
| Option Board (requires aftermarket installation) | ○ | ○ | ○ | ○ |
| RFID/NFC tag (requires aftermarket installation) | ○ | ○ | ○ | ○ |

● Included ○ Optional – Not Included

[1] Typical battery life, 5/5/90 profile at maximum transmitter power with GNSS, Bluetooth, Wi-Fi and Option Board applications disabled. Actual observed runtimes may vary.
[2] Please refer to the MOTOTRBO R7 user manual for a list of approved disinfectants and decontamination substances.
[3] Radio weight information is exclusive of General Option Board and antenna.
[4] Radio only. Battery minimum operating temperature -20 °C.
[5] Noise suppression method differs between accessories.
[6] Requires GNSS (Global Navigation Satellite System) support to be enabled.
[7] Requires WAVE PTX Backup Client subscription per radio and WAVE PTX MOTOTRBO LMR Interop add on for the system.

To learn more, visit: **motorolasolutions.com/r7**

MOTOROLA SOLUTIONS

These models are available in Motorola Solutions LACR region only. Availability varies and is subject to individual country law and regulations. All specifications shown are typical unless otherwise stated and are subject to change without notice.