



# MOTOTRBO R7

## PORTABLE TWO-WAY RADIOS

MOTOTRBO™ R7 is a digital portable two-way radio that offers loud, clear, and customisable audio in a rugged, dependable, and connected device. Its advanced audio processing ensures that your voice is always understood, while the rugged construction is ready for the toughest environments.



### KEY FEATURES

- UHF/VHF
- Wi-Fi 2.4/5.0 GHz
- WPA3 Wi-Fi security protocol compliant
- Bluetooth 5.2
- 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 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<sup>1</sup>
- IP68 (waterproof up to 2 metres for 2 hours)
- IP66 (concentrated water jet pressure)
- Intrinsically safe option (UL TIA-4950)
- Disinfectant and decontamination substance resistant housing<sup>2</sup>
- Robust and corrosion-proof side connector
- Rugged to MIL-STD 810



# SPECIFICATIONS

## GENERAL SPECIFICATIONS

| R7 FULL KEYPAD MODEL (FKP) |  | R7 AND R7A NO KEYPAD MODEL (NKP) |               |               |
|----------------------------|--|----------------------------------|---------------|---------------|
| Band                       | UHF  | VHF                              | UHF           | VHF           |
| Frequency                  | 400-527 MHz  | 136-174 MHz                      | 400-527 MHz   | 136-174 MHz   |
| High Power Output          | 4 W  | 5 W                              | 4 W           | 5 W           |
| Low Power Output           | 1 W  |                                  |               |               |
| Channel Spacing            | 12.5 kHz, 20 kHz, 25 kHz                                     |                                  |               |               |
| Channel Capacity           | 1000 Channels  |                                  | 64 Channels   |               |
| Display                    | 2.4" 320 x 240 px. QVGA display, with up to 10 lines of text |                                  | N/A           |               |
| FCC Description            | AZ489FT7143  | AZ489FT7144                      | AZ489FT7143   | AZ489FT7144   |
| IC Description             | 109U-89FT7143  | 109U-89FT7144                    | 109U-89FT7143 | 109U-89FT7144 |
| Power Supply (Nominal)     | 7.5 V  |                                  |               |               |

### MOTOTRBO R7 with 2200 mAh Slim IMPRES Li-Ion battery (PMNN4807)

|  |                  |             |                  |             |
|--|------------------|-------------|------------------|-------------|
| Dimensions (H x W x D)                       | 132 x 56 x 35 mm |             | 132 x 56 x 31 mm |             |
| Weight <sup>3</sup>                          | 316 g            |             | 289 g            |             |
| Digital / Analogue Battery Life <sup>1</sup> | 19 / 14.5 hrs    | 20 / 15 hrs | 19 / 14.5 hrs    | 20 / 15 hrs |
| Operating Temperature                        | -20 °C to 60 °C  |             |                  |             |

### MOTOTRBO R7 with 2450 mAh Li-Ion battery (PMNN4808)

|  |                  |             |                  |             |
|--|------------------|-------------|------------------|-------------|
| Dimensions (H x W x D)                       | 132 x 56 x 41 mm |             | 132 x 56 x 37 mm |             |
| Weight <sup>3</sup>                          | 346 g            |             | 319 g            |             |
| Digital / Analogue Battery Life <sup>1</sup> | 21.5 / 16.5 hrs  | 22 / 17 hrs | 21.5 / 16.5 hrs  | 22 / 17 hrs |
| Operating Temperature                        | -20 °C to 60 °C  |             |                  |             |

### MOTOTRBO R7 with 2850 mAh IMPRES Li-Ion battery (PMNN4809)

|  |                 |               |                 |               |
|--|-----------------|---------------|-----------------|---------------|
| Dimensions (H x W x D)                       | 132 x 56 x 35mm |               | 132 x 56 x 31mm |               |
| Weight <sup>3</sup>                          | 333 g           |               | 306 g           |               |
| Digital / Analogue Battery Life <sup>1</sup> | 25 / 19 hrs     | 26 / 19.5 hrs | 25 / 19 hrs     | 26 / 19.5 hrs |
| Operating Temperature                        | -20 °C to 60 °C |               |                 |               |

### MOTOTRBO R7 with 3200 mAh HazLoc IMPRES Li-Ion battery (PMNN4810)

|  |                  |             |                  |             |
|--|------------------|-------------|------------------|-------------|
| Dimensions (H x W x D)                       | 132 x 56 x 41 mm |             | 132 x 56 x 37 mm |             |
| Weight <sup>3</sup>                          | 366 g            |             | 339 g            |             |
| Digital / Analogue Battery Life <sup>1</sup> | 28 / 21.5 hrs    | 29 / 22 hrs | 28 / 21.5 hrs    | 29 / 22 hrs |
| Operating Temperature                        | -20 °C to 60 °C  |             |                  |             |

# SPECIFICATIONS

## TRANSMITTER SPECIFICATIONS

|  |  |
|--|--|
| Channel Spacing                        | 12.5 kHz, 20 kHz, 25 kHz   |
| 4FSK Digital Modulation                | <ul style="list-style-type: none"> <li>12.5 kHz Data Only: 7K60F1D &amp; 7K60FXD</li> <li>12.5 kHz Data &amp; Voice: 7K60F1E &amp; 7K60FXE</li> <li>Combination of 12.5 kHz Voice and Data: 7K60F1W</li> </ul> |
| Digital Protocol                       | <ul style="list-style-type: none"> <li>ETSI TS 102 361-1, -2, -3, -4</li> <li>DMR Tier II, III</li> </ul>  |
| Conducted/Radiated Emissions (TIA603D) | <ul style="list-style-type: none"> <li>-36 dBm &lt; 1 GHz</li> <li>-30 dBm &gt; 1 GHz</li> </ul>   |
| Adjacent Channel Power                 | <ul style="list-style-type: none"> <li>60 dB @ 12.5 kHz</li> <li>70 dB @ 20 kHz / 25 kHz</li> </ul>  |
| Frequency Stability                    | +/-0.5 ppm   |

## RECEIVER SPECIFICATIONS

|  |   |
|--|---|
| Analogue Sensitivity (12dB SINAD)          | 0.16 µV (typical)   |
| Digital Sensitivity (5% BER)               | 0.14 µV (typical)   |
| Intermodulation (TIA603D)                  | 70 dB   |
| Adjacent Channel Selectivity, (TIA603A)-1T | <ul style="list-style-type: none"> <li>60 dB @ 12.5 kHz</li> <li>70 dB @ 20 kHz / 25 kHz</li> </ul> |
| Adjacent Channel Selectivity, (TIA603D)-2T | <ul style="list-style-type: none"> <li>45 dB @ 12.5 kHz</li> <li>70 dB @ 20 kHz / 25 kHz</li> </ul> |
| Spurious Rejection (TIA603D)               | 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 metres                    |

## 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                    |
| Maximum Number of SSIDs     | 128 (64 for NKP Models)         |

## HAZLOC CERTIFICATION

ANSI/UL TIA 4950 and CAN/CSA C22.2 No. 157-92 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

## BLUETOOTH SPECIFICATIONS

|                          |  |
|--------------------------|--|
| Version                  | 5.2  |
| Range                    | Class 2, 10 m  |
| 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 (TIA603D)  | +1, -3 dB   |
| Audio Output Power (Rated/Max)                                  | 1 W / 3 W   |
| Audio Distortion at Rated Audio                                 | ≤1.5%   |
| Maximum Speech Loudness by Default (ISO5326)                    | 102 phon @ 30 cm  |
| Maximum Programmable Speech Loudness (Extra Loud Mode, Level 3) | 107 phon @ 30cm   |
| Hum and Noise   | <ul style="list-style-type: none"> <li>-40 dB @ 12.5 kHz</li> <li>-45 dB @ 20 kHz / 25 kHz</li> </ul> |
| Conducted Spurious Emissions (TIA603D)                          | -57 dBm   |

## ENVIRONMENTAL SPECIFICATIONS

|                                    |   |
|------------------------------------|---|
| Operating Temperature <sup>4</sup> | -30°C to 60°C   |
| Storage Temperature                | -40 °C to 85 °C   |
| 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 810)

|                         | 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         | -            | 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 |              |               |              |                  |              |                   |              |                  | 504.2        | II               | 504.3        | 2.2.6 b          |

# FEATURE COMPATIBILITY

|   | R7 FKP | R7 NKP | R7a |
|---|--------|--------|-----|
| <b>GENERAL</b>  |        |        |     |
| UHF Band 4 W, VHF Band 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                            | ○      | ○      | –   |
| Outdoor Location Tracking                               | ○      | ○      | –   |
| 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                                     | ○      | ○      | –   |
| <b>AUDIO</b>  |        |        |     |
| Intelligent Audio in Analogue and Digital               | •      | •      | •   |
| IMPRES Audio  | •      | •      | •   |
| Automatic Acoustic Feedback Suppressor                  | •      | •      | •   |
| Microphone Distortion Control                           | •      | •      | •   |
| User-Selectable Audio Profile                           | •      | •      | •   |
| Trill Enhancement                                       | •      | •      | •   |
| Advanced Dual Microphone Noise Suppression <sup>6</sup> | •      | •      | –   |
| Single Microphone Noise Cancellation                    | –      | –      | •   |
| <b>SYSTEMS</b>  |        |        |     |
| Dual Capacity Direct Mode                               | •      | •      | •   |
| Conventional  | •      | •      | •   |
| IP Site Connect   | •      | •      | •   |
| Capacity Plus Single/Multi Site                         | •      | •      | •   |
| Capacity Max  | ○      | ○      | ○   |

|   | R7 FKP | R7 NKP | R7a            |
|---|--------|--------|----------------|
| <b>MANAGEMENT</b>                                     |        |        |                |
| 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                       | ○      | ○      | ○              |
| <b>SAFETY</b>   |        |        |                |
| Emergency Button                                      | •      | •      | •              |
| Man Down / Fall Alert                                 | ○      | ○      | –              |
| Lone Worker   | •      | •      | •              |
| IP68 (waterproof up to 2 metres for 2 hours)          | •      | •      | •              |
| IP66 (concentrated water jet pressure)                | •      | •      | •              |
| Rugged to MIL-STD 810                                 | •      | •      | •              |
| Disinfectant / Decontamination Resistant <sup>2</sup> | •      | •      | •              |
| Sensor Integration                                    | ○      | ○      | –              |
| Integrated Accelerometer                              | •      | •      | –              |
| Basic Privacy   | •      | •      | • <sup>7</sup> |
| Enhanced Privacy                                      | •      | •      | •              |
| AES256 encryption                                     | ○      | ○      | ○              |
| Transmit Interrupt                                    | •      | •      | •              |
| Digital Emergency                                     | •      | •      | •              |
| Emergency Search Tone                                 | •      | •      | •              |
| Remote Monitor  | •      | •      | •              |
| Radio Disable / Enable                                | •      | •      | •              |
| Secure Processor                                      | •      | •      | •              |
| Digital Certificates                                  | •      | •      | –              |
| <b>CUSTOMISATION</b>                                  |        |        |                |
| GCAI-Mini Accessory Port                              | •      | •      | •              |
| 6 Programmable Buttons                                | •      | –      | –              |
| 4 Programmable Buttons                                | –      | •      | •              |
| Day / Night Screen Mode                               | •      | –      | –              |
| Action List   | •      | –      | –              |
| Label Recess  | •      | •      | •              |
| Option Board <sup>5</sup>                             | ○      | ○      | –              |

• Included ○ Optional – Not Included

<sup>1</sup> 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.

<sup>2</sup> Please refer to the MOTOTRBO R7 user manual for a list of approved disinfectants and decontamination substances.

<sup>3</sup> Radio weight information is exclusive of General Option Board and antenna.

<sup>4</sup> Please check battery specifications for more detail on battery operating temperature.

<sup>5</sup> Pending aftermarket option board installation.

<sup>6</sup> Noise suppression method differs between accessories.

<sup>7</sup> Basic privacy is not available for TIA-certified R7a but is included as standard on non-TIA R7a models.

For more information, please visit  
[motorolasolutions.com/R7](https://motorolasolutions.com/R7)

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