



# MOTOTRBO R7

## PORTABLE TWO-WAY RADIOS

MOTOTRBO™ R7 is a digital portable two-way radio that offers **game-changing audio capabilities** in a rugged, future-ready device. Its **advanced audio processing ensures that your communications are loud and clear**, while its rugged construction is ready for harsh environments, and advanced connectivity options get your workforce ready for tomorrow.

### 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 107 phons
- Wideband speaker and microphones
- Simple audio configuration
- **Up to 28 hours of battery life<sup>1</sup>**
- **IP68 (waterproof up to 2 meters 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
- 5 years of hardware repair, technical support, software updates and premium features

<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.



# SPECIFICATIONS

## GENERAL SPECIFICATIONS

		FULL KEYPAD MODEL (FKP)		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, 25 kHz <sup>1</sup>				
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)	5.2 x 2.2 x 1.4 in. (131.8 x 56 x 34.7 mm)		5.2 x 2.2 x 1.2 in. (131.8 x 56 x 31.3 mm)		
Weight <sup>2</sup>	11 oz (316 g)		10 oz (289 g)		
Digital / Analog Battery Life <sup>3</sup>	19 / 14.5 hrs	20 / 15 hrs	19 / 14.5 hrs	20 / 15 hrs	
Operating Temperature	-4 °F to 140 °F (-20 °C to 60 °C)				

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

Dimensions (H x W x D)	5.2 x 2.2 x 1.4 in. (131.8 x 56 x 34.7 mm)		5.2 x 2.2 x 1.2 in. (131.8 x 56 x 31.3 mm)		
Weight <sup>2</sup>	12 oz (333 g)		11 oz (306 g)		
Digital / Analog Battery Life <sup>3</sup>	25 / 19 hrs	26 / 19.5 hrs	25 / 19 hrs	26 / 19.5 hrs	
Operating Temperature	-4 °F to 140 °F (-20 °C to 60 °C)				

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

Dimensions (H x W x D)	5.2 x 2.2 x 1.6 in. (131.8 x 56 x 40.7 mm)		5.2 x 2.2 x 1.5 in. (131.8 x 56 x 37.3 mm)		
Weight <sup>2</sup>	13 oz (366 g)		12 oz (339 g)		
Digital / Analog Battery Life <sup>3</sup>	28 / 21.5 hrs	29 / 22 hrs	28 / 21.5 hrs	29 / 22 hrs	
Operating Temperature	-4 °F to 140 °F (-20 °C to 60 °C)				

<sup>1</sup> 25 kHz channels not available in USA.

<sup>2</sup> Radio weight information is exclusive of General Option Board and antenna.

<sup>3</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.

Specifications are subject to change without notice. All specifications shown are typical values.

# SPECIFICATIONS

## TRANSMITTER SPECIFICATIONS

Channel Spacing	12.5 kHz, 25 kHz <sup>1</sup>
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 @ 25 kHz<sup>1</sup></li> </ul>
Frequency Stability	+/-0.5 ppm

## RECEIVER SPECIFICATIONS

Analog 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 @ 25 kHz<sup>1</sup></li> </ul>
Adjacent Channel Selectivity, (TIA603D)-2T	<ul style="list-style-type: none"> <li>• 45 dB @ 12.5 kHz</li> <li>• 70 dB @ 25 kHz<sup>1</sup></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 meters

## 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/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

## SERVICE COVERAGE

Included: Hardware repair, technical support, software updates and premium features (5 years)

Optional: Accidental damage (5 years)

## BLUETOOTH SPECIFICATIONS

Version	5.2
Range	Class 2, 33 ft (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 @ 25 kHz<sup>1</sup></li> </ul>
Conducted Spurious Emissions (TIA603D)	-57 dBm

## ENVIRONMENTAL SPECIFICATIONS

Operating Temperature <sup>2</sup>	-22 °F to 140 °F (-30 °C to 60 °C)
Storage Temperature	-40 °F to 185 °F (-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) 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	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, II/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 <sup>9</sup>									504.2	II	504.3	2.2.6 b

<sup>1</sup> 25 kHz channels not available in USA.

<sup>2</sup> Radio only. Battery requires -20 °C minimal operating temperature.

# FEATURE COMPATIBILITY

	R7 FKP	R7 NKP
<b>GENERAL</b>		
UHF Band 4 W, VHF Band 5 W	•	•
Full Keypad	•	–
Color Screen	•	–
Analog 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	•	•
Option Board	○	○
Late Entry	•	•
Priority Scan	•	•
Real-Time Clock	•	•
Audio Recording/Playback	○	○
Secure Linux Operating System	•	•
M-Radio Control App	○	○
<b>AUDIO</b>		
Intelligent Audio in Analog and Digital	•	•
IMPRES Audio	•	•
Automatic Acoustic Feedback Suppressor	•	•
Microphone Distortion Control	•	•
User-Selectable Audio Profile	•	•
Trill Enhancement	•	•
Advanced Dual Microphone Noise Suppression <sup>1</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
<b>MANAGEMENT</b>		
CPS 2.0 and Radio Management	•	•
Over-the-Air Programming	•	•
Over-the-Air Software Update	•	•
IMPRES Energy	○	○
IMPRES Battery Management	○	○
Over-the-Air Battery Management	○	○
<b>SAFETY</b>		
Sensor Integration	○	○
Integrated Accelerometer	•	•
Man Down / Fall Alert	○	○
Lone Worker	•	•
Basic Privacy	•	•
Enhanced Privacy	○	○
Transmit Interrupt	○	○
Digital Emergency	•	•
Emergency Search Tone	•	•
Remote Monitor	•	•
Radio Disable / Enable	•	•
IP68 (waterproof up to 2 meters for 2 hours)	•	•
IP66 (concentrated water jet pressure)	•	•
Rugged to MIL-STD 810	•	•
Secure Processor	•	•
Digital Certificates	•	•
<b>CUSTOMIZATION</b>		
GCAI-Mini Accessory Port	•	•
6 Programmable Buttons	•	–
4 Programmable Buttons	–	•
Day/Night Screen Mode	•	–
Action List	•	–
Emergency Button	•	•
Label Recess	•	•
Option Board	○	○

- Included
  - Optional
  - Not Included
- <sup>1</sup> Noise suppression method differs between accessories.

Specifications are subject to change without notice. All specifications shown are typical values.

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

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