

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

- UHF/VHF/350 MHz/800 MHz
- Wi-Fi 2.4/5.0 GHz
- WPA3 Wi-Fi security protocol compliant
- Bluetooth 5.2
- Digital and analogue signalling
- 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
- 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 life¹
- IP68 (waterproof up to 2m for 2 hours)
- IP66 (concentrated water jet pressure)
- Intrinsically safe option (UL TIA-4950)
- Disinfectant and decontamination substance resistant housing²
- Robust and corrosion-proof side connector
- Rugged to MIL-STD 810
- 5 years of hardware repair, technical support and software updates with optional add-ons for enhanced cover.



Specifications

GENERAL SPECIFICATIONS

R7 FULL KEYPAD MODEL (FKP)					R7 AND R7A NO KEYPAD MODEL (NKP)			
Band	VHF	350 MHz	UHF	800 MHz	VHF	350 MHz	UHF	800 MHz
Frequency	136-174 MHz	350-400 MHz	400-527 MHz	806-825 MHz, 851-870 MHz	136-174 MHz	350-400 MHz ⁶	400-527 MHz	806-825 MHz, 851-870 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
IC Description	109U-89FT7144	N/A	109U-89FT7143	109U-89FT7169	109U-89FT7144	N/A	109U-89FT7143	109U-89FT7169
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 2450 MAH LI-ION BATTERY (PMNN4808)

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	346 g (12 oz)				319 g (11 oz)			
Digital / Analogue Battery Life ¹	22 / 17 hrs	21.5 / 16.5 hrs	21.5 / 16.5 hrs	21.5 / 17.5 hrs	22 / 17 hrs	21.5 / 16.5 hrs	21.5 / 16.5 hrs	21.5 / 17.5 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 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)							



Specifications

TRANSMITTER SPECIFICATIONS

Channel Spacing	12.5 kHz, 20 kHz ⁶ , 25 kHz
4FSK Digital Modulation	<ul style="list-style-type: none"> • 12.5 kHz Data Only: 7K60F1D & 7K60FXD • 12.5 kHz Data & Voice: 7K60F1E & 7K60FXE • Combination of 12.5 kHz Voice and Data: 7K60F1W
Digital Protocol	<ul style="list-style-type: none"> • ETSI TS 102 361-1, -2, -3, -4 • DMR Tier II and DMR Tier III
Conducted/Radiated Emissions (TIA603D)	<ul style="list-style-type: none"> • -36 dBm < 1 GHz • -30 dBm > 1 GHz
Adjacent Channel Power	<ul style="list-style-type: none"> • 60 dB @ 12.5 kHz • 70 dB @ 20 kHz / 25 kHz
Frequency Stability	+/-0.5 ppm

RECEIVER SPECIFICATIONS

Analogue Sensitivity (12dB SINAD)	0.16 µV (0.21µV for 800 MHz model)
Digital Sensitivity (5% BER)	0.14 µV (0.18µV for 800 MHz model)
Intermodulation (TIA603D)	70 dB
Adjacent Channel Selectivity, (TIA603A)-1T	<ul style="list-style-type: none"> • 60 dB @ 12.5 kHz • 70 dB @ 20 kHz / 25 kHz
Adjacent Channel Selectivity, (TIA603D)-2T	<ul style="list-style-type: none"> • 45 dB @ 12.5 kHz • 70 dB @ 20 kHz / 25 kHz
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 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
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, 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 (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 @ 30 cm
Hum and Noise	<ul style="list-style-type: none"> • -40 dB @ 12.5 kHz • -45 dB @ 20 kHz / 25 kHz
Conducted Spurious Emissions (TIA603D)	-57 dBm

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) 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, 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



Feature Comparison

R7 is available with full keypad and no keypad versions. R7a is available only as no keypad versions.

GENERAL	R7 FULL KEYPAD		R7 NO KEYPAD		R7A NO KEYPAD
	ENABLE MODEL	CAPABLE MODEL	ENABLE MODEL	CAPABLE MODEL	
VHF 5 W, UHF / 350MHz 4 W, 800 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 ⁷	●	●	●	●	-
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	○	○	○	○	-
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 Suppression ⁵	●	●	●	●	-
Single Microphone Noise Cancellation	-	-	-	-	●
SYSTEMS					
Dual Capacity Direct Mode	●	●	●	●	●
Conventional	●	●	●	●	●
IP Site Connect	●	●	●	●	●
Capacity Plus Single/Multi Site	●	●	●	●	●
Capacity Max	○	○	○	○	○

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.

MANAGEMENT	R7 FULL KEYPAD		R7 NO KEYPAD		R7A NO KEYPAD
	ENABLE MODEL	CAPABLE MODEL	ENABLE MODEL	CAPABLE MODEL	
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	●	●	●	●	-
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)	○	○	○	○	-

● Included ○ Optional - Not Included

⁴ Radio only. Battery minimum operating temperature -20 °C.

⁵ Noise suppression method differs between accessories.

⁶ R7a does not support 350 MHz band. R7 FKP and R7 NKP 350 MHz models do not support 20 kHz channel spacing.

⁷ Requires GNSS (Global Navigation Satellite System) support to be enabled.

To learn more, visit: motorolasolutions.com/R7



These models available in Motorola Solutions APAC 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.

MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. All other trademarks are the property of their respective owners. ©2024 Motorola Solutions, Inc. All rights reserved. 09-2024 [SF04APAC]

Commutronics Enterprise Co.,Ltd

commutronics.com.tw

+886 2 7043922

service@commutronics.com.tw

