



# 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) 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)

Motorola Solutions UK Ltd, Nova South, 160 Victoria Street, London, SW1E 5LB, United Kingdom.

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