



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 life¹
- 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 housing²
- 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 ³	316 g		289 g	
Digital / Analogue Battery Life ¹	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 ³	346 g		319 g	
Digital / Analogue Battery Life ¹	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 ³	333 g		306 g	
Digital / Analogue Battery Life ¹	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 ³	366 g		339 g	
Digital / Analogue Battery Life ¹	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"> 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, 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 (typical)
Digital Sensitivity (5% BER)	0.14 µV (typical)
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 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"> -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
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
GENERAL			
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	○	○	–
AUDIO			
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 ⁶	•	•	–
Single Microphone Noise Cancellation	–	–	•
SYSTEMS			
Dual Capacity Direct Mode	•	•	•
Conventional	•	•	•
IP Site Connect	•	•	•
Capacity Plus Single/Multi Site	•	•	•
Capacity Max	○	○	○

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

• 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 Please check battery specifications for more detail on battery operating temperature.

⁵ Pending aftermarket option board installation.

⁶ Noise suppression method differs between accessories.

⁷ 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

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

Availability is subject to individual country law and regulations. All specifications shown are typical unless otherwise stated and are subject to change without notice.

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