Data Sheet

APX N50

Single-band P25 portable two-way radio

Simple. Reliable. Secure.

Staying connected and being able to collaborate, whenever, wherever, is a prerequisite for mobile workers.

Our APX N50 is a slim yet rugged pick-up-and-go radio that's designed to give first responders, public-safety support and administrative staff secure communications that they can rely on in the field to stay organized and effectively respond to whatever the day throws at them.

Remarkably small and sleek and tough enough for all day use in harsh environments. ViQi Basic Voice Control, large controls and display make it simple to use on the go. This is a radio that optimizes speed and space. Whatever the environment, users can hear and be heard with loud and clear audio. Advanced microphones and exclusive speaker design combined with leading APX audio algorithms automatically filter background noise and adjust volume levels to the environment, keeping hands free and focus optimized.

The APX N50 works reliably across a variety of frequencies, modes and protocols. It connects seamlessly with accessories and other devices via Bluetooth® or Wi-Fi, and can even switch between radio coverage and Wi-Fi with SmartConnect. Hardware encryption algorithms, batch radio programming tools, and a portfolio of services and tech support keep communications secure and ensure devices always have the latest features.

MOTOROLA SOLUTIONS

New antenna technology improves comfort and wearability

Intuitive hard controls, protected against accidental activation

2 microphones capture audio from any direction

Distinctive buttons for PTT, emergency and ViQi, and two additional programmable side buttons

Programmable buttons for one-touch quick access

Custom speaker for loud and clear communications

Features

OPERATION MODES
Digital Trunking: 9600 Baud APCO P25 phase 1 FDMA and phase 2 TDMA
Digital Conventional: APCO 25
Analog Digital: 3600 Baud SmartNet®, SmartZone®, Omnilink®
Analog Conventional: MDC 1200
ASTRO® 25 Integrated Voice and Data
SmartConnect via W-iFi[1*]

FREQUENCY BANDS
7/800 MHz
VHF
UHF
Up to 1000 channels
Up to 65 Zones

ADDITIONAL CONNECTIVITY
Bluetooth (Version 4.2)
Wi-Fi 802.11 a/b/g/n/ac, 2.4 and 5 GHz Bands[1]

AUDIO FEATURES[2]
3 W Speaker with Adaptive Equalization
3 Microphones (2 Internal HDR, 1 Wind Mitigation) Adaptive Dual-sided Operation
Adaptive Noise Suppression Intensity[1]
Adaptive Gain Control[1]
Adaptive Windporting[1]
Noise Sensing Volume Control[1]
Receive Volume Leveling[1]
IMPRES Audio Accessory Compatibility
Intelligent Noise Reduction[1]

MANAGEMENT
Customer Programming Software (CPS)
Radio Management (RM)

LOCATION-TRACKING
Built-in GNSS (GPS, GLONASS)

SENSORS
Accelerometer (Man Down/Fall Alert)[1]

SECURITY
256-bit AES[1]
Single-key ADP encryption
Software Key
P25 Authentication[1]
Multikey for 48 Keys and Multi-algorithm[1]
Over-The-Air Rekeying (OTAR)[1]
Multi system Over The Air Rekeying (MS OTAR)

HAZLOC (WHEN USED WITH DIV1 BATTERY)
Class I - Division 1 Groups C, D; Division 2 Groups A, B, C, D
Class II - Division 1 Groups E, F, G; Division 2 Groups F, G
Class III - Hazardous Locations

MESSAGING
Canned Messages

VOICE INTERACTION
Customizable Voice Announcements
ViQi: Voice Actions with predetermined Commands[1]

ENERGY
Standard 2850 mAh Battery
Optional UL Div 1 3200 mAh Battery
IMPRES 2 Smart Battery Technology

INGRESS PROTECTION
IP6x Dust
IPx8 submersion (2 m, 2 hr)

USER INTERFACE
2.4” Mission-critical Display: 240x320 TFT 65k Color Transflective Display
PTT Button: 1.22 x 0.47 in (31 x 12 mm)
16-position Channel Selector
Power/Volume Knob
Orange Emergency Button
3 Programmable Side Buttons (1-dot, 2-dot, purple/3-dot)
2 Programmable Front Buttons

VOICE INTERACTION
RADIO WITH STANDARD BATTERY, NO ANTENNA
Height: 5.3 in (135 mm)
Width: 2.2 in (55 mm)
Depth: 1.3 in (33 mm)
Weight: 13.1 oz (370 g)

OTHER FEATURES
Radio Profiles
Enhanced Data[1]
Multicast Voting Scan[1]
Man Down/Fall Alert[1]
DVRS PSU[1]
Digital Tone Signaling[1]
APX Personnel Accountability[1]
Instant Recall
Geofence[1]
Stun Kill[1]
Data Modem Tethering[1]
Group Services[1]

* Contact sales team for availability in your country/region.

[1] Optional feature (English language only)

[2] If using an audio accessory, a compatible audio accessory must be selected to leverage optional audio features.

Performance

TRANSMITTER					
	NOTE	700 MHZ	800 MHZ	VHF	UHF
Frequency Range / Bandsplits	-	762-776, 792-806 MHz	806-825, 851-870 MHz	136-174 MHz	380-520 MHz
Channel Spacing	-	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz
Maximum Frequency Separation	-	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power (Adjustable)	1	1-2.5 W	1-3 W	1-5 W	1-5 W
Frequency Stability (-30 °C to +60 °C; +25 °C Ref.)	1	±1.0 ppm	±1.0 ppm	±1.0 ppm	±1.0 ppm
Modulation Limiting (12.5 / 20 / 25 kHz Channel)	1	±2.5 / ±4 / ±5 kHz	±2.5 / ±4 / ±5 kHz	±2.5 / ±4 / ±5 kHz	±2.5 / ±4 / ±5 kHz
Emissions (Conducted and Radiated)	1	-75 dBc	-75 dBc	-75 dBc	75 dBc
Audio Response	1	+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB
FM Hum and Noise (12.5 / 25 kHz Channel)	-	-45 / -47 dB	-45 / -47 dB	-47 / -47 dB	-49 / -50 dB
Audio Distortion (12.5 / 25 kHz Channel)	1	1.00%	1.00%	1.00%	1.00%

RECEIVER					
	NOTE	700 MHZ	800 MHZ	VHF	UHF
Frequency Range / Bandsplits	-	762-776, 799-806 MHz	851-870 MHz	136-174 MHz	380-520 MHz
Channel Spacing	-	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz
Maximum Frequency Separation	-	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Audio Output Power at Rated	1	0.5 W	0.5 W	0.5 W	0.5 W
Analog Sensitivity (12 dB SINAD)	2	0.25 µV	0.25 µV	0.216 µV	0.199 uV
Digital Sensitivity (1% BER)	3	0.4 µV	0.4 µV	0.277 µV	0.265 µV
Digital Sensitivity (5% BER)	3	0.25 µV	0.25 µV	0.188 µV	0.177 uV
Selectivity (12.5 / 25 kHz Channel)	1	-61.3 / -75.2 dB	-61.3 / -75.2 dB	-62.3 / -78.2 dB	-62 / -76 dB
Intermodulation Rejection	-	-75 dB	-75 dB	-79.0 dB	-80 dB
Spurious Rejection	-	-76.6 dB	-76.6 dB	-80.5 dB	-88db
FM Hum and Noise (12.5 / 25 kHz Channel)	-	-47 / -53 dB	-47 / -53 dB	-45 / -51 dB	-50 / -55 dB
Audio Distortion	1	1.00%	1.00%	1.00%	1.00%

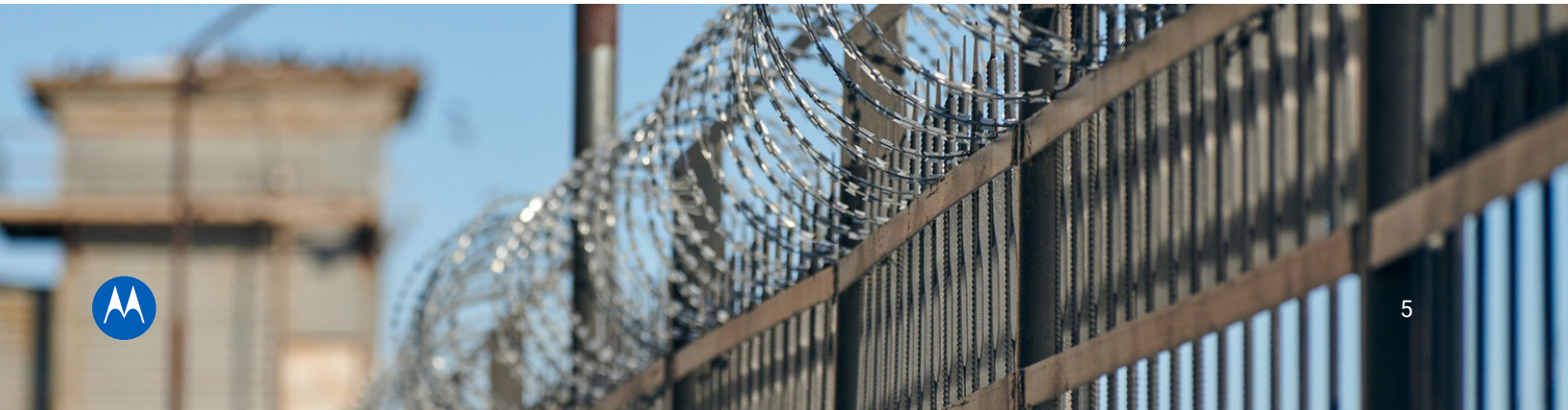
IMPRES™ 2 BATTERIES				
	NOTE	PART NO	CAPACITY	AVAILABILITY
Standard	-	PMNN4813	2850 mAh	Included
HAZLOC	4	PMNN4815	3200 mAh	Optional

ENCRYPTION	
Supported Encryption Algorithms	ADP, AES-256, DES, DES-XL, DES-OFB, DVP-XL, Localized Algorithm
Encryption Algorithm Capacity	8
Encryption Keys per Radio	1024 Keys, Programmable for 48 Common Key References (CKR) upgradable to 64 CKRs, or 16 Physical Identifiers (PID)
Encryption Keying	Local Key Loader and Over-the-Air Rekeying (OTAR)
Synchronization	XL - Counter Addressing OFB - Output Feedback
Vector Generator	NIST-Approved Random Number Generator
Encryption Type	Digital and SecureNet, TLS1.2, SRTP
Key Storage	Tamper-protected Volatile or Non-volatile Memory
Key Erasure	Keyboard Command and Tamper Detection
Standards	FIPS 140-3 Level 1 and Level 3, FIPS 197
Device Certificates	x.509v3 ECC-P384, x.509v3 RSA-2048
Cipher Suites FIPS 140-2 Level 1	TLS_RSA_WITH_AES_256_GCM_SHA384 SRTP_AEAD_AES_256_GCM1

LOCATION TRACKING		
	NOTE	
Constellations	-	GPS and GLONASS
Tracking Sensitivity	-	-154 dBm
Accuracy	5	<10m (95%)
Cold Start	5	<60 Seconds (95%)
Hot Start	5	<5 Seconds (95%)
Mode	-	Autonomous (non-assisted) GPS

WIRELESS		
WIFI	FOOTNOTE	
Standards Supported	-	802.11a/ b/g/n/ac
Frequency Range	-	2400-2472, 5180-5825 MHz
Security	-	Supports WPA-2, WPA, WEP
Capacity	-	Up to 20 SSIDs
BLUETOOTH	FOOTNOTE	
Version	-	4.2 (LE)
Frequency Range	-	2402 - 2480 MHz
Security	-	SSP Pairing 128-bit AES-CDM Encryption for voice, data and signaling

AUDIO		
	STANDARD	UPGRADE
Audio Output Power at Rated	0.5 W	1 W
Audio Output Power at Max	2 W	3 W
Audio Response (EIA)	+1, -3 dB	+1, -3 dB
Speech Loudness at 12 in (300 mm)	98 phon	102 Phon
Audio Features	Adaptive Dual-sided Operation Adaptive Equalization Adaptive Gain Control IMPRES Audio	Adaptive Noise Suppression Intensity Adaptive Windporting Receive Volume Leveling Noise Sensing Volume Control Intelligent Noise Reduction



Environmental and Regulatory

MIL-STD 810										
	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G/H	
	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II	500.5	II
High Temperature	501.1	I, II	501.2	I/A1, II/A1	501.3	I/A1, II/A1	501.4	I/Hot, II/BasicHot	501.5	I/A1, II/A1
Low Temperature	502.1	I	502.2	I/C3, II/C1	502.3	I/C3, II/C1	502.4	I/C3, II/C1	502.5	I/C3, II/C1
Temperature Shock	503.1	I	503.2	I/A1, C3	503.3	I/A1, C3	503.4	I	503.5	I/C
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I	505.5	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.5	I, III
Humidity	507.1	II	507.2	II	507.3	II	507.4	1 Proc	507.5	II/Aggravated
Salt Fog	509.1	I	509.2	I	509.3	I	509.4	1 Proc	509.5	1 Proc
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I
Blowing Sand	1 Proc	1 Proc	510.2	II	510.3	II	510.4	II	510.5	II
Submersion	512.1	I	512.2	I	512.3	I	512.4	I	512.5	I
Vibration	514.2	VIII/F, Curve-W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.6	I/24
Shock	516.2	I, III, V	516.3	I, V, VI	516.4	I, V, VI	516.5	I, V, VI	516.6	I, V, VI
Shock (Drop)	516.2	II	516.3	IV	516.4	IV	516.5	IV	516.6	IV

ENVIRONMENTAL		
	FOOTNOTE	
Operating Temperature	6	-30 to +60 °C (-22 to +140 °F)
Storage Temperature	6	-40 to +85 °C (-40 to +185 °F)
Humidity	-	Per MIL-STD 810
ESD	-	IEC 61000-4-2
Dust Resistance	-	IP6X
Water Resistance (Submersion)	-	IPX8 (2 meters, 2 hours)

REGULATORY				
	NOTE	MODEL NUMBER	FCC ID	IC ID
7/800 MHz		H25UCF9PW6AN	AZ489FT7161	109U-89FT7161
VHF		H25KDF9PW6AN	AZ489FT7162	109U-89FT7162
UHF		H25XDF9PW6AN	AZ489FT7175	109U-89FT7175
LMR		8K10F1D, 8K10F1E, 8K10F1W, 11K0F3E, 16K0F3E		
Bluetooth		860KF1D, 1M15G1D, 1M19G1D, 1M05F1D		
Wi-Fi (VHF, UHF, 7/800 MHz)	2.4 GHz	13M5G1D, 16M9D1D, 17M8D1D		
	5.0 GHz	16M8D1D, 16M9D1D, 17M0D1D, 17M7D1D, 17M8D1D		

1. Measured in the analog mode per TIA / EIA 603 under nominal conditions. Selectivity reflects newer 2-tone test method as defined in revision D TIA603-D issued in 2010.
2. Measured conductively in analog mode per TIA / EIA 603 under nominal conditions.
3. Measured conductively in digital mode per TIA / EIA IS 102.CAAA under nominal conditions.
4. Listed by UL to the standards ANSI/TIA 4950-A and CAN/CSA C22.2 NO. 157-92 Classification Rating: Class I, Division 1, Groups C, D; Class II, Division 1, Group E, F, G; Class III, Hazardous (Classified) Locations. ANSI/ISA 12.12.01-2015 and CAN/CSA C22.2 No. 213-15; Class I, Division 2, Groups A, B, C, D; T3C. PMNN4815B or later revision required for UHF band
5. Measured conductively with >6 satellites visible at a nominal -130 dBm signal strength. Specs provided are 95th percentile values.
6. Temperatures listed are for radio specifications. For battery, please refer to motorolasolutions.com/batterycare to ensure best or optimum battery operation.

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

To learn more, visit:
www.motorolasolutions.com/apxn50

MOTOROLA SOLUTIONS

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