UNITY® XG-100M MOBILE
FULL-SPECTRUM MULTIBAND RADIO

The Harris Unity XG-100M radio delivers best-in-class audio, ease of use and interoperability demanded by today's mission-critical operations.

MULTIBAND, INTEROPERABLE COMMUNICATIONS

KEY FEATURES

Delivers multi-agency interoperability

Software-defined architecture for in-field updates to new capabilities

Clear, distortion-free audio despite loud, harsh environments

Supports EDACS®, ProVoice™ 800 MHz trunking and Low Band VHF frequencies

User-friendly with large, full-color touchscreen display and menu-driven interface

This versatile mobile solution supports P25 and analog conventional communications across the VHF, UHF and 700/800 MHz bands, allowing first responders to connect across multiple jurisdictions and agencies operating on multiple frequencies and systems.

The XG-100M is software-defined, offering a smooth migration path with support for wideband and narrowband channels and field upgrades to additional modes including P25 Phase 2 trunking.

Equipped with advanced noise cancellation technology and an AMBE+2™ vocoder, this multiband radio ensures loud and clear audio in extremely noisy and harsh environments.

The XG-100M is also ruggedized to exceed MIL-STD-810G standards for durability. The mobile's large, full-color touchscreen display, intuitive interface and color-coded menus simplify operation. GPS is built in as standard and an optional vehicular repeater is available for extended network coverage.

HARRIS® TECHNOLOGY TO CONNECT, INFORM AND PROTECT™

SPECIFICATIONS FOR: **UNITY® XG-100M MOBILE-MULTIBAND, FULL-SPECTRUM**

GENERAL

Dimensions (H x W x D)

Radio Only (50W)	2.0 x 6.9 x 9.7 in (50 x 175 x 247 mm)
Radio and CH-721 Control Unit (includes knobs)	2.4 x 6.9 x 12.8 in (60 x 175 x 325 mm)
CH-721 Control Unit (Remote)	2.4 x 7.0 x 4.0 in (60 x 175 x 100 mm)
Radio and CH-100 Control Unit (includes knobs)	3.3 x 7.0 x 11.6 in (84 x 178 x 295 mm)
CH-100 Control Unit (Remote)	3.3 x 7.0 x 2.8 in (84 x 178 x 71 mm)

Weight

Front Mount Radio with CH-100	6.45 lb (2.93 kg)
Front Mount Radio with CH-721	5.9 lb (2.68 kg)
CH-100 Control Unit (Remote Mount)	1.20 lb (0.54 kg)
CH-721 Control Unit (Remote Mount)	1.25 lb (0.57 kg)
Remote Mount Radio	5.25 lb (2.38 kg)

Channel/Talkgroup Capacity

CH-100	12,500 (1,250 per mission plan)
CH-721	1,250

Speaker

External, 15 W

Control Unit Options

CH-100	Touchscreen, 16-bit color, 480 pixels x 272 pixels, 4.3-inch sunlight readable LCD
CH-721	System and Scan models available, 3-line 12-character alphanumeric display
HHC-731	Ruggedized and compact design, provides CH-721 features, 3-line 12-character alphanumeric display

Environmental Specifications

Relative Humidity	Per MIL-STD-810G
Ambient Temperature Range	-22° F to +140° F (-30° C to 60° C)
Altitude	
Operational	15,000 ft (4,572 m)
In-Transit	40,000 ft (12,192 m)

Electrical

System Voltage	10.8 to 16.6 VDC Negative Ground

TRANSMITTER

Typical Performance Specifications	Full-Spectrum Multiband*
Frequency Range (MHz)	30-50 (VHF low), 136-174 (VHF), 380-520 (UHF), 762-870 (700/800)
Rated RF Power (W)	VHF: 5-50, UHF: 5-50, 700: 2-30, 800: 2-35
Rated RF Power Talkaround (W)	VHF: 5-50, UHF: 5-50, 700: 2-30, 800: 2-35
Frequency Stability (-30 to +60°C) (ppm)	±0.5
Modulation Limiting (kHz)	2.5, 4, 5 (FM)
Audio Response (dB)	+1/-3
Spurious and Harmonics (dBc)	-70, FCC Part 90
FM Hum and Noise	
@ 25 kHz (dB)	VHF-low: 48.2, VHF: 48.8, UHF: 48.6, 700/800: 48.0
@ 12.5 kHz (dB)	VHF-low: 47.1, VHF: 45.9, UHF: 46.2, 700/800: 44.4
Audio Distortion (%)	<1.0
Project 25 Modulation Fidelity (%)	<1.00
Project 25 Adjacent Channel Power (dBc)	>70
Emission Designators	8K40F1D, 8K40F1E, 8K10DXW, 11K0F3E, 11K9F1D, 11K9F1E, 12K0G7D, 12K0G7E, 14K0F3E, 14K2F1D, 14K2F1E, 16K0F3E

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz.

REGULATORY DATA

Frequency Range (MHz)	RF Output (W)	Frequency Stability (ppm)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number	Applicable Industry Canada Rules	NTIA Certification Number
30-50	0.009	0.5	AZQ-XG-100M00	90	122D-XG100M00	RSS-119	NA
136-174	50	0.5	AZQ-XG-100M00	22, 80, 90	122D-XG100M00	RSS-119	J/F 12/9952
156-162	50	0.5	AZQ-XG-100M00	22, 80	122D-XG100M00	RSS-119	J/F 12/9952
380-520	50	0.5	AZQ-XG-100M00	22, 90	122D-XG100M00	RSS-119	J/F 12/9952
763-775, 793-805	30	0.5	AZQ-XG-100M00	90	122D-XG100M00	RSS-119	NA
806-824, 851-869	35	0.5	AZQ-XG-100M00	90	122D-XG100M00	RSS-119	NA

SPECIFICATIONS FOR: **UNITY® XG-100M MOBILE-MULTIBAND, FULL-SPECTRUM**

RECEIVER

Typical Performance Specifications	Full-Spectrum Multiband*
Frequency Range (MHz)	30-50 (VHF low), 136-174 (VHF), 380-520 (UHF), 762-870 (700/800)
Channel Spacing (kHz)	12.5, 20, 25
Sensitivity (12 dB SINAD) (dBm)	VHF-low: 121.5, VHF: 122.1, UHF: 121.8, 700/800: 121.2
P25 Reference Sensitivity (5% BER) (dBm)	VHF-low: 121.5, VHF: 122.1, UHF: 121.8, 700/800: 121.2
Adjacent Channel Rejection @ 25 kHz (dB)	VHF-low: 80.6, VHF: 82.5, UHF: 77.4, 700/800: 77.0
P25 Adjacent Channel Rejection @ 12.5 kHz (dB)	VHF: 63.9, UHF: 62.9, 700/800: 61.9
Intermodulation (dB)	VHF-low: 81.9, VHF: 81.9, UHF: 81.8, 700/800: 82.5
Spurious and Image Rejection (dB)	VHF-low: 86.6, VHF: 83.0, UHF: 92.4, 700/800: 94.4
FM Hum and Noise	
@ 25 kHz (dB)	VHF-low: 49.5, VHF: 54.8, UHF: 48.2, 700/800: 52.0
@ 12.5 kHz (dB)	VHF-low: 46.6, VHF: 54.6, UHF: 45.0 700/800: 44.9
Rated Speaker Audio Output Power (W)	15W RMS into 4 ohm
Audio Distortion (%)	<1.0 @ rated power

*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz.

ENVIRONMENTAL STANDARD

Applicable MIL-STD	Parameter	Methods	Procedure/Categories
MIL-STD-810G*	Low Pressure	500.5	1,2
	High Temperature	501.5	1,2
	Low Temperature	502.5	1,2
	Temperature Shock	503.5	1-B
	Solar Radiation	505.5	2
	Blowing Rain**	506.5	1
	Humidity	507.5	2
	Salt Fog	509.5	1
	Blowing Dust	510.5	1
	Vibration (Basic Transportation)	514.6	1, Category 4
	Vibration (Minimum Integrity)	514.6	1, Category 24
	Shock (Functional/Basic)	516.6	1
	Shock (Transit Drop)	516.6	4
U.S. Forest Service	Vibration (10-60 Hz)	Paragraph 2.15	
IEC 60529	Dust-tight and water jets	IP65**	

*Also meets equivalent superseded MIL-STD-810D, -E, and -F.
**CH-100 and CH-721 control units meet IP65/MIL-STD-810, XG-100M radio unit meets IP54.

DIGITAL OPERATION

Protocol	P25
Vocoding Method	AMBE + 2™ Enhanced Full Rate & Enhanced Half Rate
Signaling Rate (kbps)	9.6
Modulation	Phase 1 TX: C4FM, RX: C4FM & WCQPSK
	Phase 2 TX: HCPM, RX: WCQPSK

ENCRYPTION

Encryption Algorithms:	Voice Encryption: Single-key AES, Multiple-key AES/DES, DES-OFB, Encryption Lite (ARC4)*, 256-bit AES P25, 64-bit DES Control Channel Encryption: 128-bit AES (LLA)
Encryption Keys	128 keys (64 AES, 64 DES)
Encryption Keying	Harris Keyloader, P25 Conventional and Trunked OTAR, KVL-3000+ with CH-100

*Interoperates with commonly available ARC4 encryption algorithms.

ADVANCED FEATURES

The XG-100M delivers the advanced features required by critical communication users.

- **Multiple Mixed Systems Zones** – allows users to communicate across multiple types of systems, whether Analog Conventional, P25 Conventional, P25 Trunked Phase 1 (FDMA) or Phase 2 (TDMA). Zones composed of multiple systems are created and users can assign knob positions to channels and talkgroups on these disparate systems.

- **Command Tactical Zone (CTZ)** – allows users to dynamically create custom zones to communicate with other jurisdictions without a need for PC-enabled programming. Custom zones provide up to 48 additional channel assignments.

- **GPS Tracking** – provides quick and accurate unit location information to dispatchers via the radio network.

ACCESSORIES

The Unity XG-100M has a full complement of accessories including control units shown below.

Control Units

XG-100M control units are available in front or remote mount designs.

The CH-100 control unit incorporates a large 4.3-inch touchscreen color display with a powerful graphical user interface and a built-in microphone that works with the hand held microphone to suppress noise. Wireless audio accessories for the CH-100 are supported by Bluetooth® technology, with security enhanced through a pairing management interface controller and option for Bluetooth disable.

The CH-721 control unit has a 3-line, 12-character alphanumeric display. The unit is available in Scan (limited keypad) and System (full keypad) models and supports 800 MHz EDACS and ProVoice trunking operation. The Scan model has large selection buttons. The System model has a 12-button keypad allowing advanced operations without a DTMF microphone.

The HHC-731 Hand Held Controller provides the advanced features of the CH-721 System control unit, including siren and light bar control, all in a compact package. The ruggedized design meets a full range of environmental specifications and supports 800 MHz EDACS and ProVoice trunking operation. The 3-line, 12-character alphanumeric display is backlit for use in low-light areas. The small size of the HHC-731 makes it ideal for covert operations and space-constrained environments.

CH-100

HHC-731

CH-721 System

CH-721 Scan

Additional Accessories

Antennas, microphones, desktop control station, vehicular repeater, PC programming software, and cables are available.

About Harris Corporation

Harris Corporation is a leading technology innovator, solving customers' toughest mission-critical challenges by providing solutions that connect, inform and protect. Harris supports government and commercial customers around the world.

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