



UHF Wireless System

USER GUIDE SUPPLEMENT

UA (782-806 MHz)

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SPECIFICATIONS

RF Carrier Frequency Range

782-806 MHz

Working Range

U1: 152.4 m (500 ft) minimum, under typical conditions; 487.6 m (1600 ft) line of sight

U1H: 300 m (1000 ft.) minimum, under typical conditions; 975.2 m (3200 ft) line of sight

NOTE: Actual working range depends on RF signal absorption, reflection and interference

Audio Frequency Response

50 to 15,000 Hz, ± 2 dB. **NOTE:** Overall system frequency response depends on the microphone element

Gain Adjustment Range

U1, U1H: 0 to 40 dB

U2: 0 to 26 dB

Modulation

± 45 kHz deviation compressor-expander system with pre-and de-emphasis

RF Power Output

U1, U2: 10 mW maximum

U1H: 100 mW maximum

Dynamic Range

>102 dB, A-weighted

RF Sensitivity

U4S	U4D
-110 dBm 12 dB SINAD	-107 dBm 12 dB SINAD
-105 dBm 30 dB SINAD	-102 dBm 30 dB SINAD

Image Rejection

90 dB typical

Spurious Rejection

75 dB typical

Ultimate Quieting (ref. 45 kHz deviation)

>100 dB, A-weighted

Audio Polarity

Positive pressure on microphone diaphragm (or positive voltage applied to tip of WA302 phone plug) produces positive voltage on pin 2 with respect to pin 3 of low impedance output and the tip of the high impedance 1/4-inch output

System Distortion (ref. ± 45 kHz deviation, 1 kHz modulation)

0.3% Total Harmonic Distortion typical

Power Requirements

U1, U1A, U2: 1.5V AA alkaline battery; Nicad optional

U4: 90 to 230 Vac, 50/60 Hz

Power Consumption

U4S: 9.6 W min., 13.2 W max.

U4D: 12 W min., 16 W max.

UA840: 15 W min., 16 W max.

Battery Life (Typical)

U1, U2: 12 hours (with 1.5V AA alkaline battery)

U1H: 6 hours (with 1.5V AA alkaline battery)

Operating Temperature Range

-20° to 50° C (-4° to 122° F) **NOTE:** Battery characteristics may limit this range

Overall Dimensions

U1, U1A: 98.4 mm L x 64.7 mm W x 24.6 mm D (3-7/8 x 2-1/2 x 31/32 in.)

U2/58: 254 mm L x 50.8 mm Dia. (10 x 2 in.)

U2/BETA 58: 254 mm L x 53.2 mm Dia. (10 x 2-3/32 in.)

U2/87: 228.6 mm x 49.2 mm Dia. (9 x 1-15/16 in.)

U2/BETA 87: 216 mm L x 50.8 mm Dia. (8-1/2 x 2 in.)

U4S/U4D: 44.5 mm H x 482.6 mm W x 295.3 mm D (1-3/4 x 19 x 11-5/8 in.)

Net Weight

U1, U1A: 175.2 g (6.1 oz.) without battery

U2/58, U2/BETA 58: 375.6 g (13.2 oz.) without battery

U2/87, U2/BETA 87: 303.1 g (10.7 oz) without battery

U4S: 3.30 kg (7.27 lbs)

U4D: 3.85 kg (8.48 lbs)

Certification

U1, U1A, U2: Type Accepted under FCC Parts 74. Certified by IC in Canada under TRC-78.

U4S, U4D: UL and cUL Listed to UL 813 and CSA C22.2 No. 1. VDE Certified to EN 60 950. Approved under the Notification provision of FCC Part 15; Certified by IC in Canada under TRC-78.

U1, U1H Transmitter Input (Figure 1)

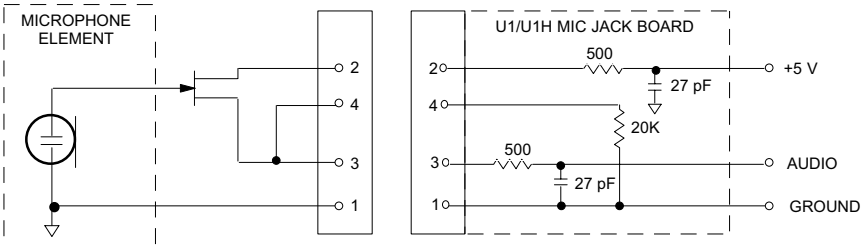
Connector:	4-Pin female mini connector (TA4F) or LEMO connector (optional)
Input Configuration:	Unbalanced, active
Actual Impedance:	18 k Ω with lavalier microphone 1 M Ω with instrument cable
Maximum Input Level:	6 Vp-p (+7 dBV) for 1% THD at minimum gain setting using 1 kHz signal.
(TA4F) Connector Pin Assignments:	Pin 1: Tied to Ground Pin 2: Tied to +5 V Pin 3: Tied to Audio Pin 4: Tied thru 20k Ω Resistor to Ground. (On instrument adapter cable, Pin 4 floats)
LEMO Connector Pin Assignments:	Pin 1: Tied to Pin 3 and 10 k Ω to Ground Pin 2: +5V Pin 3: Tied to Pin 1 Pin 4: Tied to Shield (Ground for Positive Bias)
Voltage for Remote Power:	+5 V supplied to microphone cartridge

U1, U1H Transmitter Output

Connector:	SMC
Actual Impedance:	50 Ω
Nominal Output Level:	+10 dBm (+17 dBm for U1H)
Maximum Output Level:	+11 dBm (+18 dBm for U1H)
Pin Assignments:	Shell = Ground Center = Signal

U2 Transmitter Input

Input Configuration:	Unbalanced, active
Actual Impedance:	20 k Ω
Maximum Input Level:	3 V _{p-p} (0.5 dBV) for 1% THD at minimum gain setting using 1 kHz signal.



NOTE: LAVALIER MIC TIES PINS 3 AND 4 TOGETHER; GUITAR CABLE DOES NOT.

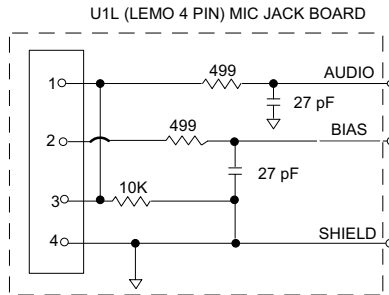


FIGURE 1

U2 Transmitter Output

Connector:	SMC
Actual Impedance:	50 Ω
Nominal Output Level:	+10 dBm
Maximum Output Level:	+11 dBm
Pin Assignments:	Shell = Ground Center = Signal

U4S and U4D Receiver Input

Connector:	Antenna	Power Input	Network Interface
Connector Type:	BNC	IEC	25-Pin D
Actual Impedance:	50 Ω	--	--
Nominal Input Level:	-95 to -30 dBm	90-230 VAC, 50/60 Hz	CMOS Logic
Maximum Input Level:	+6 dBm (-20 dBm recommended)	230 VAC, 50/60 Hz	--
Pin Assignments:	Shell = Ground Center = Signal	IEC Standard	--
Voltage for Remote Power:	12 Vdc, 150 mA maximum	--	5V, 700 mA max.

U4S and U4D Receiver Output

Connector:	Monitor	Power Output	High Z Audio	Low Z Audio*	Network Interface
Output Configuration:	Unbalanced mono, 1/4 inch	--	Unbalanced	Balanced	See Appendix
Actual Impedance:	300 Ω	--	1 k Ω	30 Ω	See Appendix
Nominal Input Level:	--	90 to 230 VAC, 5A	--	--	CMOS Logic
Pin Assignments:	Tip = Hot Ring = Hot Sleeve = Gnd	IEC Standard	Tip = Hot Ring/ Sleeve = Gnd	1 = Ground 2 = Hot 3 = Hot	See Appendix
Voltage/ Current/ Phantom Power Protection?	Yes	--	Yes	Yes	5V, 700 mA resettable polyfuse

*Output Level: Microphone Level = Line Level - 30 dB

FURNISHED ACCESSORIES

Microphone Stand Adapter (U2).....	WA370A
Zipper Bag (U1).....	26A13
Zipper Bag (U2).....	26A14
Screwdriver	80A498
Coaxial Antenna Cable (2 ft)	UA802
1/2 Wave Antenna.....	UA820A
Transmitter Carrying Case	65A8257
Carrying Case Insert	29B1577

OPTIONAL ACCESSORIES

Instrument Adapter Cable (U1)	WA302
Female 4-Pin Mini Connector (TA4F) (U1).....	WA330
In-Line Audio Switch (U1)	WA360
1.8 Meter (6 ft) Receiver-Mixer Cable (1/4" phone to XLR)	WA410
7.6 Meter (25 ft) Antenna Extension Cable	UA825
15.2 (50 ft) Meter Antenna Extension Cable	UA850
In-Line Active Remote Antenna Kit (782 - 810 MHz).....	UA830A
Antenna/Power Distribution System, 120 Vac.....	UA840A
Directional Antenna.....	UA870A

REPLACEMENT PARTS

Hardware Kit (screwdriver, mounting feet, cable clamps).....	90VL1371
Bulkhead Adapters for Front-Mounting Antennas	95A8647
120 VAC Power Cord (U.S. mains connector)	95A8389
305 mm (12 in.) Daisy-Chain Power Cord (120 V).....	95A8570
SM58 [®] Cartridge with Grille (U2/58).....	R158
BETA 58A [®] Cartridge with Grille (U2/BETA 58).....	R179
SM87 Cartridge with Grille (U2/87)	R165
BETA 87A Cartridge with Grille (U2/BETA 87A).....	R166
BETA 87C Cartridge with Grille (U2/BETA 87C)	RPW100
Matte Silver Grille (U2/58).....	RK143G
Matte Silver Grille (U2/BETA 58).....	RK265G
Matte Silver Grille (U2/BETA 87A)	RK313G
Black Grille (U2/87C)	RK214G
Black Grille (U2/BETA 58).....	RK323G
Black Grille (U2/BETA 87A)	RK324G
Belt Clip (U1).....	53A8247A
Antenna (U1).....	95A8646
Antenna (U2).....	95A2029

FREQUENCY SELECTION GUIDE

The Shure UHF Wireless System is designed for maximum flexibility and versatility in a variety of applications. Up to 20 Shure UHF Wireless Systems can be operated simultaneously in a single installation using the frequency compatibility groups. Groups A1 and A2 are included in a “master list” that covers all frequencies in the 782 to 806 MHz band. When using the U4D dual receiver, maintain a minimum of 500 kHz separation between each receiver in the U4D. Please contact the Shure Customer Service Department if you need additional information or assistance in frequency selection and setup.

COMPATIBILITY GROUPS

The Shure UHF Wireless System includes seven groups of compatible channels. If you are using more than one receiver in the same area, we recommend that you set the receivers to different frequencies within the same group.

Use frequencies from Groups 1-3 in locations where TV channels 66, 67, 68, and 69 are NOT in use. If any of these TV channels are present in your location, use frequencies from one of the Groups 4-7 as indicated in the following table. Use the UHF TV Channel Guide in this supplement to determine which TV channels may be present in your area.

NOTE: The Group and Channel for any frequency in the UHF band as well as the TV channel corresponding to that frequency is displayed on the U4 receiver. If the receiver displays a TV channel that is active in your area for a frequency you have selected, choose a different frequency.

TV CHANNEL PRESENT	OPEN UHF CHANNELS	RECOMMENDED UHF WIRELESS FREQUENCY GROUP
None	66, 67, 68, 69	Groups 1-3, 4-7
66	67, 68, 69	Group 4
67	66, 68, 69	Group 5
68	66, 67, 69	Group 6
69	66, 67, 68	Group 7

COMPATIBLE FREQUENCY LIST

The following table lists the frequencies in each of the seven compatibility groups. Fewer channels are available in Groups 4-7.

CHANNEL	TV CHANNELS 66, 67, 68, 69 OPEN			TV CHANNEL 66 PRESENT	TV CHANNEL 67 PRESENT	TV CHANNEL 68 PRESENT	TV CHANNEL 69 PRESENT
	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7
1	782.750	783.125	782.625	788.500	782.625	783.125	782.125
2	783.375	783.750	783.125	789.000	784.250	783.750	783.000
3	785.125	784.625	783.875	790.125	785.125	784.750	783.625
4	786.000	785.750	785.625	790.875	786.375	785.500	784.875
5	787.250	786.500	787.875	792.250	787.125	786.875	785.875
6	788.250	788.125	789.125	793.000	794.125	788.750	787.250
7	788.875	788.875	789.875	796.500	795.250	789.750	788.375
8	790.000	790.250	791.125	798.000	796.875	790.375	789.000
9	790.875	791.000	792.875	798.750	797.625	791.625	789.875
10	792.250	792.875	793.375	799.750	799.250	793.125	790.375
11	795.250	796.500	794.875	800.500	800.375	800.500	792.875
12	796.000	797.875	795.375	801.875	802.375	801.000	794.125
13	797.625	798.625	796.125	802.500	802.875	801.750	795.625
14	798.750	799.750	798.250	803.500	803.625	803.500	796.375
15	800.250	800.375	799.625	804.250	804.625	804.125	798.125
16	800.750	801.375	801.375	804.750	805.125	805.000	799.000
17	802.500	803.375	802.125	805.500	-	805.625	799.625
18	803.500	803.875	803.375	-	-	-	-
19	805.000	805.125	804.875	-	-	-	-
20	805.750	805.750	805.625	-	-	-	-

UHF TV CHANNEL GUIDE (FOR U.S. CHANNELS 66-69)

The following table identifies U.S. cities that have UHF TV stations operating on TV Channels 66, 67, 68, and 69. Shure recommends that you operate your wireless system only on TV channels *other* than those listed for your location.

STATE	CITY	TV CHANNEL	STATE	CITY	TV CHANNEL
Alabama	Birmingham	68	Michigan	East Lansing	69
	Opelika-Auburn	66		Flint	66
	Troy	67	New Jersey	Newark	68
California	Los Angeles	68		West Milford	66
	Salinas-Monterrey	67	New York	Ilion	67
	Novato	69		Smithtown	67
	San Diego	69		Springville	67
	Vallejo	66		Syracuse	68
Florida	Bradenton	66	North Carolina	Bryson City	67
	Cocoa	68		Forest City	66
	Hollywood	69		High Point	67
	Lake Worth	67	Ohio	Canton	67
Georgia	Atlanta	69		Mansfield	68
	Toccoa	68		Springfield	66
Hawaii	Lihue	67	Pennsylvania	Allentown	69
Illinois	Danville	68		Erie	66
	Elgin	66	Rhode Island	Block Island	69
	Galesburg	67	South Dakota	Lowry	68
	Joliet	66	Tennessee	Lebanon	66
Indiana	Anderson	67	Texas	Alvin	69
	Indianapolis	69		Arlington	68
Iowa	Des Moines	69	Virginia	Fredericksburg	69
Kentucky	Louisville	68		Grundy	68
	Morehead	67		Manassas	66
	Paintsville	69	Washington	Olympia	67
Maryland	Baltimore	67	Wisconsin	Fond du Lac	68
	Hagerstown	68	West Virginia	Fairmont	66
Massachusetts	Boston	68	Puerto Rico	Humacao	68
	Marlborough	66			

MASTER LIST

The Shure “Master List” (Groups A1-A3) is a comprehensive index of all system frequencies. Note that not all “Master List” channels are compatible.

FREQUENCY	U.S. TV CHANNEL	GROUP/ CHANNEL
782.125	66	A1/1
782.250	66	A1/2
782.375	66	A1/3
782.500	66	A1/4
782.625	66	A1/5
782.750	66	A1/6
782.875	66	A1/7
783.000	66	A1/8
783.125	66	A1/9
783.250	66	A1/10
783.375	66	A1/11
783.500	66	A1/12
783.625	66	A1/13
783.750	66	A1/14
783.875	66	A1/15
784.000	66	A1/16
784.125	66	A1/17
784.250	66	A1/18
784.375	66	A1/19
784.500	66	A1/20
784.625	66	A1/21
784.750	66	A1/22
784.875	66	A1/23
785.000	66	A1/24
785.125	66	A1/25
785.250	66	A1/26
785.375	66	A1/27
785.500	66	A1/28
785.625	66	A1/29
785.750	66	A1/30
785.875	66	A1/31
786.000	66	A1/32
786.125	66	A1/33
786.250	66	A1/34
786.375	66	A1/35
786.500	66	A1/36
786.625	66	A1/37
786.750	66	A1/38
786.875	66	A1/39
787.000	66	A1/40
787.125	66	A1/41
787.250	66	A1/42
787.375	66	A1/43
787.500	66	A1/44
787.625	66	A1/45
787.750	66	A1/46

FREQUENCY	U.S. TV CHANNEL	GROUP/ CHANNEL
788.250	67	A1/50
788.375	67	A1/51
788.500	67	A1/52
788.625	67	A1/53
788.750	67	A1/54
788.875	67	A1/55
789.000	67	A1/56
789.125	67	A1/57
789.250	67	A1/58
789.375	67	A1/59
789.500	67	A1/60
789.625	67	A1/61
789.750	67	A1/62
789.875	67	A1/63
790.000	67	A1/64
790.125	67	A1/65
790.250	67	A1/66
790.375	67	A1/67
790.500	67	A1/68
790.625	67	A1/69
790.750	67	A1/70
790.875	67	A1/71
791.000	67	A1/72
791.125	67	A1/73
791.250	67	A1/74
791.375	67	A1/75
791.500	67	A1/76
791.625	67	A1/77
791.750	67	A1/78
791.875	67	A1/79
792.000	67	A1/80
792.125	67	A1/81
792.250	67	A1/82
792.375	67	A1/83
792.500	67	A1/84
792.625	67	A1/85
792.750	67	A1/86
792.875	67	A1/87
793.000	67	A1/88
793.125	67	A1/89
793.250	67	A1/90
93.375	67	A1/91
793.500	67	A1/92
793.625	67	A1/93
793.750	67	A1/94
793.875	67	A1/95

FREQUENCY	U.S. TV CHANNEL	GROUP/ CHANNEL
794.125	68	A2/2
794.250	68	A2/3
794.375	68	A2/4
794.625	68	A2/6
794.750	68	A2/7
794.875	68	A2/8
795.000	68	A2/9
795.125	68	A2/10
795.250	68	A2/11
795.375	68	A2/12
795.500	68	A2/13
795.625	68	A2/14
795.750	68	A2/15
795.875	68	A2/16
796.000	68	A2/17
796.125	68	A2/18
796.250	68	A2/19
796.375	68	A2/20
796.500	68	A2/21
796.625	68	A2/22
796.750	68	A2/23
796.875	68	A2/24
797.000	68	A2/25
797.125	68	A2/26
797.250	68	A2/27
797.375	68	A2/28
797.500	68	A2/29
797.625	68	A2/30
797.750	68	A2/31
797.875	68	A2/32
798.000	68	A2/33
798.125	68	A2/34
798.250	68	A2/35
798.375	68	A2/36
798.500	68	A2/37
798.625	68	A2/38
798.750	68	A2/39
798.875	68	A2/40
799.000	68	A2/41
799.125	68	A2/42
799.250	68	A2/43
799.375	68	A2/44
799.500	68	A2/45
799.625	68	A2/46
799.750	68	A2/47
799.875	68	A2/48

FREQUENCY	U.S. TV CHANNEL	GROUP/CHANNEL
800.000	69	A2/49
800.250	69	A2/51
800.375	69	A2/52
800.500	69	A2/53
800.625	69	A2/54
800.750	69	A2/55
800.875	69	A2/56
801.000	69	A2/57
801.125	69	A2/58
801.250	69	A2/59
801.375	69	A2/60
801.500	69	A2/61
801.625	69	A2/62
801.750	69	A2/63
801.875	69	A2/64
802.000	69	A2/65
802.125	69	A2/66
802.250	69	A2/67
802.375	69	A2/68
802.500	69	A2/69
802.625	69	A2/70
802.750	69	A2/71
802.875	69	A2/72
803.000	69	A2/73
803.125	69	A2/74
803.250	69	A2/75
803.375	69	A2/76
803.500	69	A2/77
803.625	69	A2/78
803.750	69	A2/79
803.875	69	A2/80
804.000	69	A2/81
804.125	69	A2/82
804.250	69	A2/83
804.375	69	A2/84
804.500	69	A2/85
804.625	69	A2/86
804.750	69	A2/87
804.875	69	A2/88
805.000	69	A2/89
805.125	69	A2/90
805.250	69	A2/91
805.375	69	A2/92
805.500	69	A2/93
805.625	69	A2/94
805.750	69	A2/95
805.875	69	A2/96

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