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# SPECIFICATIONS

## RF Carrier Frequency Range

838–862 MHz

## Working Range

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

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

## Audio Frequency Response

50 to 15,000 Hz,  $\pm 2$  dB

**NOTE:** Overall system frequency response depends on the microphone element

## Gain Adjustment Range

U1: 0 to 40 dB

U2: 0 to 26 dB

## Modulation

$\pm 40$  kHz deviation compressor-expander system with pre-and de-emphasis

## RF Power Output

U1, U2: 10 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. $\pm 45$ kHz deviation, 1 kHz modulation)

0.3% Total Harmonic Distortion typical

## Power Requirements

U1, U2: 1.5V AA alkaline battery (Duracell MN1500 recommended); Nicad optional

U4: 90 to 230 Vac , 50/60 Hz

Power Consumption: 9.6 W min., 13.2 W max. (U4S)

12 W min., 16 W max. (U4D)

15 W min., 16 W max. (UA840)

## Battery Life (Typical)

12 hours (with Duracell MN1500 1.5V AA alkaline battery)

## Operating Temperature Range

$-20^{\circ}$  to  $50^{\circ}$  C ( $-4^{\circ}$  to  $122^{\circ}$  F)

**NOTE:** Battery characteristics may limit this range

## Overall Dimensions

U1: 92.2 mm L x 64.7 mm W x 24.2 mm D (3–29/32 x 2–35/64 x 61/64 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: 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, U2: EMC Approved to ETS 300 445. RA Type Approved in the U.K. to MPT1350.

U4S, U4D: VDE Certified to EN 60 950. EMC Approved to ETS 300 445. Meets Low Voltage Directive.

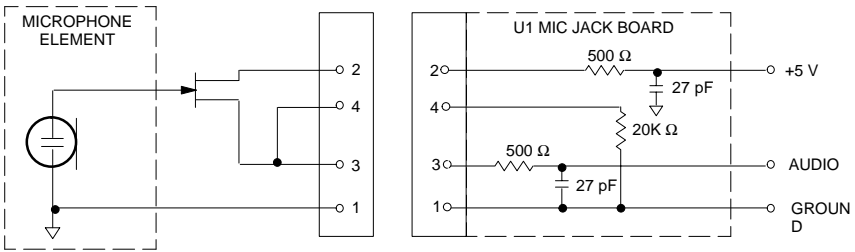
UHF Type Approved and EMC Approved systems are eligible to carry the CE marking.

## U1 Transmitter Input (Figure 1)

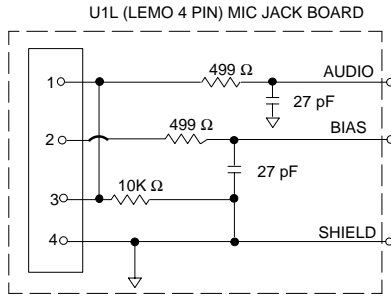
<b>Connector:</b>	4-Pin Female Miniature Connector (TA4F) or LEMO connector (optional)
<b>Input Configuration:</b>	Unbalanced, active
<b>Actual Impedance:</b>	18 k $\Omega$ with lavalier microphone 1 M $\Omega$ with instrument cable
<b>Maximum Input Level:</b>	6 V <sub>p-p</sub> (+7 dBV) for 1% THD at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

## U1 Transmitter Output

<b>Connector:</b>	SMC
<b>Actual Impedance:</b>	50 $\Omega$
<b>Nominal Output Level:</b>	+10 dBm
<b>Maximum Output Level:</b>	+11 dBm
<b>Pin Assignments:</b>	Shell = Ground Center = Signal



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



**FIGURE 1**

## U2 Transmitter Input

<b>Input Configuration:</b>	Unbalanced, active
<b>Actual Impedance:</b>	20 k $\Omega$
<b>Maximum Input Level:</b>	3 V <sub>p-p</sub> (0.5 dBV) for 1% THD at minimum gain setting using 1 kHz signal.

## U2 Transmitter Output

<b>Connector:</b>	SMC
<b>Actual Impedance:</b>	50 $\Omega$
<b>Nominal Output Level:</b>	+10 dBm
<b>Maximum Output Level:</b>	+11 dBm
<b>Pin Assignments:</b>	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 $\Omega$	—	—
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	—	Un- balanced	Balanced	See Appendix
Actual Impedance:	300 $\Omega$	—	1 k $\Omega$	30 $\Omega$	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
4–Pin Female Miniature 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 (838 – 862 MHz) .....	UA830KK
Antenna/Power Distribution System, 230 Vac .....	UA845–KK
Directional Antenna .....	UA870KK

## REPLACEMENT PARTS

Hardware Kit (screwdriver, mounting feet, cable clamps) .....	90VL1371
Bulkhead Adapters for Front–Mounting Antennas .....	95A8647
230 VAC Power Cord (U.K. mains connector) .....	95A8713
304 mm (12 in.) Daisy–Chain Power Cord (230 V) .....	95A8678
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 87) .....	R166
BETA 87C Cartridge with Grille (U2/BETA 87) .....	RPW100
Matte Silver Grille (U2/58) .....	RK143G
Matte Silver Grille (U2/BETA 58) .....	RK265G
Matte Silver Grille (U2/BETA 87) .....	RK313G
Black Grille (U2/87) .....	RK214G
Black Grille (U2/BETA 58) .....	RK323G
Black Grille (U2/BETA 87) .....	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 16 Shure UHF Wireless Systems can be operated simultaneously in a single installation using the frequency compatibility groups. Please contact Shure Incorporated if you need additional information or assistance in frequency selection and setup.

## Compatibility Groups

Group 1 contains 10 compatible frequencies which are derived from a combination of fixed site (Multi UHF High and Low) frequencies, as well as Indoor Use at Fixed Site frequencies.

Group 2 contains 14 fixed site frequencies taken entirely from the Multi UHF High and Low Band (these frequencies are not compatible).

Groups 3 and 4 contain 10 compatible channels within the 854–862 MHz band.

Groups 5 and 6 contain 16 compatible channels within the 846–862 MHz band.

Groups 7, 8 and 9 contain 16 compatible channels within the 838–862 MHz band.

Group 10 contains 16 compatible frequencies within the 838–862 MHz band.

## Compatible Frequency List

The following table lists the frequencies in each of the ten compatibility groups.

		GROUP									
		GRP. 1	GRP. 2	GRP. 3	GRP. 4	GRP. 5	GRP. 6	GRP. 7	GRP. 8	GRP. 9	GRP. 10
CHANNEL	1	854.900	854.900	855.525	855.900	846.875	848.125	843.000	839.250	842.375	839.250
	2	855.900	855.275	856.525	856.650	847.875	849.250	846.000	840.750	843.000	840.250
	3	856.575	855.900	857.025	857.150	848.375	849.875	847.000	841.375	844.750	841.000
	4	857.125	856.175	857.775	858.025	849.625	850.750	847.625	843.000	845.250	844.375
	5	858.025	856.575	858.775	858.650	851.125	851.250	848.500	843.750	852.875	845.500
	6	858.650	857.625	859.400	859.650	851.875	852.000	850.375	845.000	853.875	846.125
	7	859.625	857.950	860.275	860.400	853.500	853.000	852.000	845.750	854.625	847.625
	8	860.400	858.200	860.775	860.900	854.875	853.625	854.250	847.500	855.125	848.875
	9	860.900	858.650	861.525	861.650	856.625	855.500	856.750	848.000	855.875	851.125
	10	861.750	860.400	855.025	854.900	858.125	857.000	857.500	850.500	856.875	852.500
	11		860.900			858.875	857.625	858.750	851.625	858.375	854.250
	12		861.200			859.375	858.750	859.750	853.875	859.500	854.875
	13		861.550			860.375	859.375	860.375	855.000	860.250	855.750
	14		861.750			860.875	860.750	861.250	855.500	861.250	857.625
	15					861.625	861.375	861.750	857.750	861.875	858.250
	16					846.375	847.500	842.500	838.750	841.500	838.625

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