

# PASSWORD® SERIES UHF WIRELESS MICROPHONE SYSTEMS



TOA PASSWORD® SERIES WIRELESS MICROPHONE SYSTEMS combine cutting edge wireless technology with user benefits such as fast setup, simple operation, and reliable performance. The systems are frequency-agile with sixty-four user-selectable channels in the uncrowded UHF band (692 - 722 MHz) with simultaneous operation of up to sixteen systems.

The WT-4800 True Diversity Receiver has an on-board scanner and three squelch types, carrier, noise and tone-key, to ensure quiet, interference-free operation. Other receiver features include Antenna Loop outputs for antenna distribution for up to two additional receivers and a convenient Mix-In jack for connecting the audio output of a second WT-4800 or other source. Receiver options include the MB-WT1 and MB-WT2 Rack-Mount Kits for single or dual WT-4800 mounting in only one 19" rack space, the WD-4800 Antenna Distributor and the YW-4500 Remote Antenna.

Password® transmitter options include the WM-4200 Handheld Microphone and the WM-4300 Lapel Microphone with Bodypack. Both offer ten hours of operation from one nine volt battery, low battery indication and adjustable sensitivity. The WM-4300 bodypack also has a recessed on/off switch to prevent accidental shut-off, a mini-XLR jack for alternative mic elements and rotatable lapel and bodypack clips for versatile mounting.

Password® Series wireless systems are FCC and UL listed and are backed by a two year warranty.



## HIGHLIGHTS

### Applications

- A/V Rentals
- Bingo Halls
- Boardrooms
- Community Centers
- Fitness Clubs
- Hotels
- Houses of Worship
- Presenters
- Restaurants
- Schools
- Theatres

### Features

- Professional Wireless Microphone Systems
- Frequency-Agile — Sixty-Four Channels
- UHF Band (692 - 722 MHz)
- Up To Sixteen Simultaneous Systems
- On-Board Scanner
- True Diversity Reception
- Handheld And Lapel Microphone Systems
- Ten Hours Continuous Transmitter Operation from One Nine Volt Battery
- FCC and UL Listed
- Two Year Warranty

## PASSWORD® SYSTEMS

**Password-H** Handheld Mic, Receiver and Rack-Mount Kit

**Password-L** Lapel Mic and Bodypack, Receiver and Rack-Mount Kit

**Password-HL** Handheld/Lapel Combo, One Receiver and Rack-Mount Kit\*

## PASSWORD® OPTIONAL ACCESSORIES

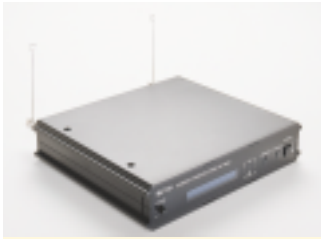
**MB-WT1** Rack-Mount Kit for One or Two WT-4800 (1 RU)

**MB-WT2** Rack-Mount Kit for Two WT-4800 (1RU)

**WD-4800** Antenna Distributor for up to Four WT-4800 (1RU)

**YW-4500** Remote Antenna

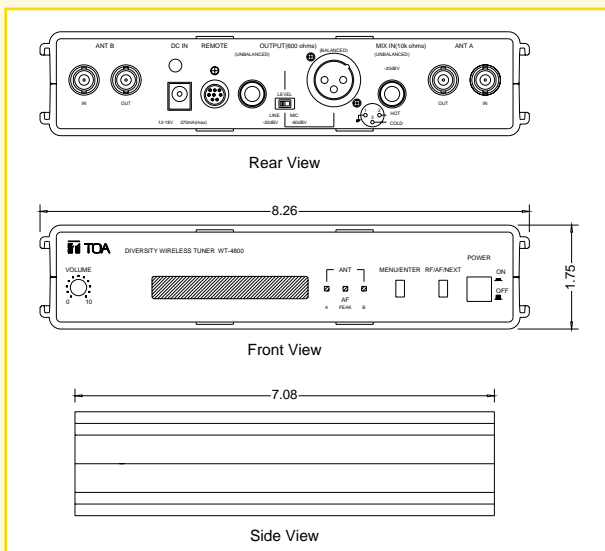
\* Each receiver supports one transmitter at a time.



## WT-4800 TRUE DIVERSITY RECEIVER

- 64 Channel Frequency-Agile
- On-Board Scanner
- True Diversity Reception
- Two Detachable Antennas Included
- Three Squelch Types (Carrier, Noise and Tone-Key)
- Antenna Loop Outputs
- Output Volume Control
- RF and AF Meters
- Outputs: Balanced XLR-M and Unbalanced 1/4" Phone Jack
- Mic/Line Switch
- Mix-In Jack
- Front Panel LCD, Antenna and Peak LEDs
- Optional Rack-Mount Kits:
  - MB-WT1 (One or Two WT-4800)
  - MB-WT2 (Two WT-4800)
- Also Compatible With Scout® Series Transmitters:
  - WM-4210, WM-4220, WM-4310, WM-4310A and WM-4310H (16 Channel Frequency-Agile)

### DIMENSIONAL DRAWING



WT-4800

<b>Model No.</b>	WT-4800
<b>Frequency Range</b>	692 - 722 MHz
<b>Selectable Channels</b>	64 (4 Banks x 16 Channels)
<b>Receiving System</b>	Double super-heterodyne
<b>Diversity Method</b>	TOA space diversity
<b>S/N Ratio</b>	Greater than 110 dB (A-weighted)
<b>Harmonic Distortion</b>	Less than 1%
<b>Frequency Response</b>	100 Hz - 12 kHz, $\pm 3$ dB
<b>Receiving Sensitivity</b>	Greater than 80 dB S/N ratio (20 dB $\mu$ V input, 40 kHz deviation)
<b>Squelch Methods</b>	Carrier, Noise and Tone Key
<b>Squelch Sensitivity</b>	18 - 40 dB $\mu$ V variable
<b>Tone Key Frequency</b>	32.768 kHz
<b>Channel Check</b>	Scans each Bank (1-4) for available frequencies
<b>Audio Outputs</b>	<ul style="list-style-type: none"> <li>■ Connectors: XLR-3-31 (male), balanced (Pin #2 Hot) 1/4" phone jack, unbalanced</li> <li>■ Level: MIC: -60 dBV (1 mV) LINE: -20 dBV (100 mV)</li> <li>■ Output Impedance: 600 <math>\Omega</math></li> <li>*MIC/LINE Switch affects both outputs.</li> </ul>
<b>Mix Input</b>	<ul style="list-style-type: none"> <li>■ Connector: 1/4" phone jack (unbalanced)</li> <li>■ Level: -20 dBV (100 mV)</li> <li>■ Input Impedance: 10 k<math>\Omega</math></li> </ul>
<b>Antenna Input</b>	75 $\Omega$ , BNC Phantom power for YW-4500 antenna, 9 VDC, 30 mA
<b>Antenna Output</b>	75 $\Omega$ , BNC (0 dB gain), allows antenna looping to additional WT-4800's (two max.)
<b>Digital Control I/O</b>	Computer interface (TOA Service Centers only)
<b>Indicators</b>	<ul style="list-style-type: none"> <li>■ LCD: Audio, RF</li> <li>■ LED: ANT A/B, AF PEAK (3 dB below clipping)</li> </ul>
<b>Controls</b>	Menu/Enter, Power, RF/AF/Next, Volume
<b>Power Requirement</b>	AC mains (using supplied AC-DC adapter)
<b>Power Consumption</b>	250 mA (12 VDC)
<b>Operating Temperature</b>	+14° F to +122° F (-10° C to +50° C)
<b>Finish</b>	Resin, black
<b>Dimensions (W x H x D)</b>	8.27" x 1.76" x 7.09" (210 mm x 44.6 mm x 180 mm)
<b>Weight</b>	5.2 lbs. (2.35 kg)
<b>Accessories</b>	(2) whip antenna, (1) AC-DC adapter (120 VAC, 60 Hz)
<b>Options</b>	<ul style="list-style-type: none"> <li>■ MB-WT1 Rack-Mount Kit for one or two WT-4800</li> <li>■ MB-WT2 Rack-Mount Kit for two WT-4800 (side by side)</li> <li>■ WD-4800 Diversity Antenna Distributor for up to four WT-4800</li> <li>■ YW-4500 Remote Dipole Antenna</li> </ul>



## WM-4200 HANDHELD MICROPHONE

- 64 Channel Frequency-Agile
- Optimized for Speech and Vocals/Singing
- Dynamic Mic Element
- Unidirectional, Cardioid Pattern
- Low Handling Noise
- Ten Hours Continuous Operation from One Nine Volt Battery
- Low Battery Indication
- Mic Clip and Carrying Pouch Included
- Also Compatible With Scout® Series WT-4810 Portable Receiver (16 Channel Frequency-Agile)

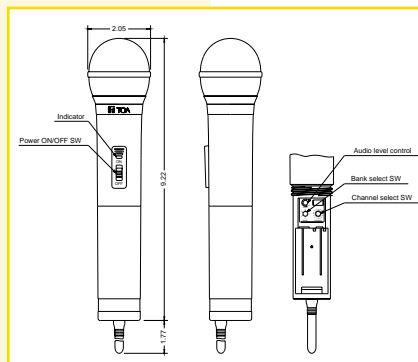


## WM-4300 LAPEL MICROPHONE WITH BODYPACK

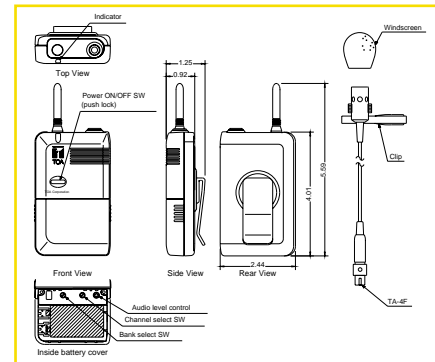
- 64 Channel Frequency-Agile
- Hands-free Operation
- Electret Condenser Mic Element
- Unidirectional, Cardioid Pattern
- Adjustable Input Sensitivity
- Ten Hours Continuous Operation from One Nine Volt Battery
- Low Battery Indication
- Recessed On/Off Switch
- Mini-XLR (TA-4F Compatible) Connector
- Rotating Bodypack and Lapel Clips
- Mic Clip and Carrying Pouch Included
- Also Compatible With Scout® Series WT-4810 Portable Receiver (16 Channel Frequency-Agile)

<b>Model No.</b>	WM-4200	WM-4300
<b>Description</b>	Handheld Microphone (Speech/Vocal)	Lapel Microphone w/ Bodypack
<b>Microphone Element</b>	Dynamic, cardioid	Electret condenser, cardioid
<b>Maximum Input Level</b>	145 dB SPL	120 dB SPL
<b>Transmission Method</b>	Frequency Modulation (F3E)	
<b>Frequency Range</b>	692 - 722 MHz	
<b>Selectable Channels</b>	64 (4 Banks x 16 Channels)	
<b>RF Carrier Power</b>	Less than 50 mW	
<b>Maximum Deviation</b>	±40 kHz	
<b>Transmission Distance</b>	492 ft. (150 m) <i>(free field, with WT-4800)</i>	
<b>Modulation System</b>	PLL Synthesizer	
<b>Tone Frequency</b>	32.768 kHz	
<b>Battery</b>	9 V (6LR61) x 1, minimum 10 hours operation (alkaline type)	
<b>Indicator</b>	Power LED - flashes to indicate low battery level (< 6 VDC)	
<b>Antenna</b>	1/4 wave helical antenna	
<b>Controls</b>	Power On/Off (recessed), Bank/Channel Select, Sensitivity	
<b>Cable Length</b>	—	4.76 ft. (1.45 m)
<b>Operating Temperature</b>	+14° F to +122° F (-10° C to +50° C)	
<b>Finish</b>	Resin, rubber coating	Resin, coating
<b>Dimensions</b>	2.06" dia. x 11" L (52.2 mm x 279.4 mm)	2.44" W x 5.59" H x 1.26" D (62 mm x 142 mm x 32 mm)
<b>Weight (with battery)</b>	0.60 lbs. (270 g)	0.33 lbs. (150 g)
<b>Accessories</b>	Stand Adapter Frequency-adjust screw driver, storage case	Lapel Clip (Rotates 360°)

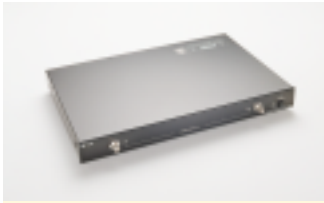
### DIMENSIONAL DRAWINGS



WM-4200



WM-4300



## WD-4800 ANTENNA DISTRIBUTOR

- Antenna and DC Power Distribution for up to Four WT-4800's
- Two Paralleled Front and Rear Panel Antenna Inputs, Eight Antenna Outputs, BNC-Type
- Use with Whip Antennas (Included with WT-4800) or Two YW-4500's
- Four DC Cables Included
- Optional Rack-Mount Kit, Model MB-15B

<b>Model No.</b>	WD-4800
<b>Frequency Range</b>	VHF/UHF
<b>Antenna Inputs</b>	BNC, 75 Ω, Two each on front and rear panels (paralleled)
<b>Antenna Outputs</b>	BNC, 75 Ω, Eight outputs (four from each front/rear-panel antenna input), 9 VDC / 25 mA for YW-4500 antenna
<b>DC Power Supply</b>	Four outputs (12 VDC) for WT-4800
<b>Indicator</b>	Power LED
<b>Controls</b>	Power On/Off, Voltage Select
<b>Power Requirement</b>	AC mains (120 / 230 VAC selectable)
<b>Operating Temperature</b>	+14° F to +122° F (-10° C to +50° C)
<b>Finish</b>	Steel, black
<b>Dimensions (W x H x D)</b>	16.54" x 1.73" x 8.02" (420 mm x 44 mm x 203.8 mm)
<b>Weight</b>	7.83 lbs. (3.55 kg)
<b>Accessories</b>	(1) Power cord, (4) DC cable
<b>Option</b>	MB-15B Rack-Mount Kit

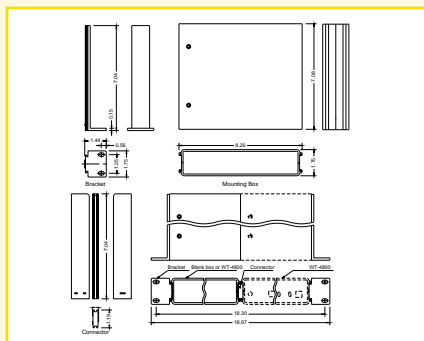


## YW-4500 REMOTE ANTENNA

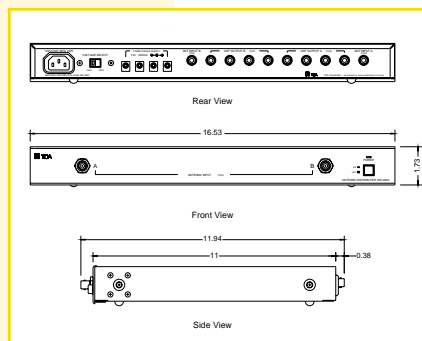
- Fixed-Mount Dipole Antenna for Permanent Installation
- Provides 8 dB Gain
- Use with WT-4800 or WD-4800
- Cable Type and Maximum Connection Distance:  
RG-6/U - 115 ft. (35 m)  
RG-11/U - 165 ft. (50 m)

<b>Model No.</b>	YW-4500
<b>Frequency Range</b>	680 - 880 MHz, UHF
<b>Antenna Gain</b>	Greater than 8 dB
<b>V. S. W. R.</b>	Less than 3
<b>Output Impedance</b>	75 Ω
<b>Recommended Cable</b>	RG-6/U: 115 ft. (35 m) max. RG-11/U: 164 ft. (50 m) max.
<b>Mounting Hole Pitch</b>	3.29" (83.5 mm) (one gang electrical box)
<b>Power Requirement</b>	7 - 12 VDC (supplied from WT-4800 or WD-4800)
<b>Current Consumption</b>	Less than 24 mA
<b>Operating Temperature</b>	+14° F to +122° F (-10° C to +50° C)
<b>Finish</b>	AES resin, off-white
<b>Dimensions (W x H x D)</b>	4.13" x 5.51" x 4.96" (105 mm x 140 mm x 126 mm)
<b>Weight</b>	0.66 lbs. (300 g)

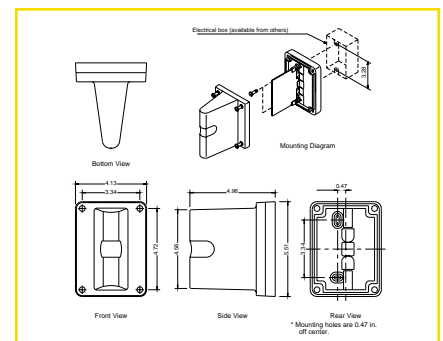
### DIMENSIONAL DRAWINGS



MB-WT1/WT2



WD-4800

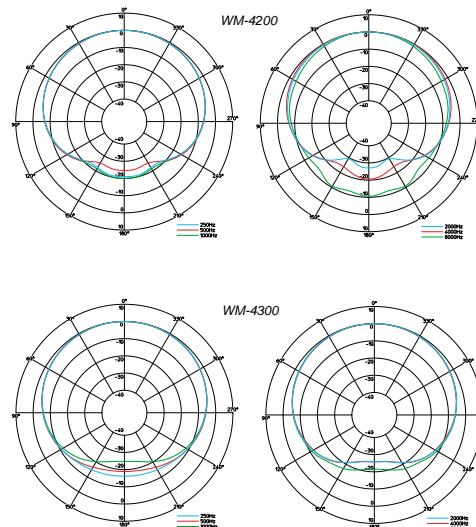


YW-4500

## WM-4300 BODYPACK CONNECTOR PINOUT

<b>Connector Type</b>	Mini-XLR (TB-4M, accepts TA-4F)
<b>Pin 1</b>	Ground
<b>Pin 2</b>	+5 VDC
<b>Pin 3</b>	Audio (15 kΩ)
<b>Pin 4</b>	Audio with +5 VDC (2.2 kΩ to DC)

## POLAR PATTERNS



## PASSWORD® FREQUENCIES

Wireless Channel	Bank 1			Bank 2			Bank 3			Bank 4		
	Frequency (MHz)	US UHF TV Channel		Frequency (MHz)	US UHF TV Channel		Frequency (MHz)	US UHF TV Channel		Frequency (MHz)	US UHF TV Channel	
0	692.125	51		692.325	51		692.525	51		692.725	51	
1	692.475	51		692.675	51		692.875	51		693.075	51	
2	692.925	51		693.125	51		693.325	51		693.525	51	
3	693.475	51		693.675	51		693.875	51		694.075	51	
4	694.125	51		694.325	51		694.525	51		694.725	51	
5	695.025	51		695.225	51		695.425	51		695.625	51	
6	696.475	51		696.675	51		696.875	51		697.075	51	
7	698.225	52		698.425	52		698.625	52		698.825	52	
8	700.125	52		700.325	52		700.525	52		700.725	52	
9	702.775	52		702.975	52		703.175	52		703.375	52	
A	703.875	52		704.075	53		704.275	53		704.475	53	
B	706.625	53		706.825	53		707.025	53		707.225	53	
C	709.725	53		709.925	53		710.125	54		710.325	54	
D	713.925	54		714.125	54		714.325	54		714.525	54	
E	716.125	55		716.325	55		716.525	55		716.725	55	
F	720.975	55		721.175	55		721.375	55		721.575	55	

### Note:

Password® wireless systems operate in the UHF frequency band of 692 - 722 MHz, the same as US TV Channels 51 to 55. Interference may occur from existing TV channels within this band, depending on proximity to the TV transmitter tower. Simultaneous operation of up to sixteen systems is possible from within any one of Banks 1 to 4. If all of the above TV Channels are active in your area, please contact TOA to arrange for an alternative custom range of frequencies (additional charge).

## Wireless Microphone System

The wireless microphone system shall be of professional quality with an operating frequency range of 692 to 722 MHz with 64 selectable channels and simultaneous operation of up to sixteen systems. The transmission method shall be frequency modulation (F3E) using a PLL-based modulation system. RF carrier power shall be no greater than 50 mW. Transmission distance as measured in free field shall be 492 ft. (150 m). The system shall be FCC and UL listed with a two year manufacturer's warranty.

## Wireless Receiver

The wireless receiver shall have 64 selectable channels and a built-in scanner function to scan the RF environment and indicate available channels. The receiving method shall be double super-heterodyne using antenna switching diversity. Specifications shall include a S/N ratio of greater than 110 dB (A-weighted), harmonic distortion of less than 1% and frequency response of 100 Hz - 12 kHz,  $\pm 3$  dB. The receiving sensitivity shall be greater than 80 dB with 20 dB $\mu$ V input and 40 kHz deviation. Squelch types shall be carrier, noise and tone key with a variable squelch sensitivity of 18 - 40 dB $\mu$ V and a 32.768 kHz tone key frequency. The receiver shall have two antenna inputs, each with BNC-type connectors, 75 ohm impedance and 9 VDC, 30 mA, available for remote antennas. The unit shall also have two antenna outputs, with BNC-type connectors, 75 ohm impedance, and 0 dB gain, to provide antenna distribution to a maximum of two additional receivers. The audio outputs shall be balanced type with XLR-M jack, and unbalanced type with 1/4" phone jack, both with an output impedance of 600 ohms and switchable sensitivity between MIC (-60 dBV / 1 mV and LINE (-20 dBV / 100 mV). A Mix Input, unbalanced type with 1/4" phone jack with an input impedance of 10 kohms and sensitivity of -20 dBV / 100 mV shall allow the connection of the output of a second receiver or other audio source to be mixed with the main receiver output signal. The front panel shall include an LCD for RF and AF metering as well as frequency setting and scanner functions. Front panel LED's shall include ANT A/B

and an AF PEAK that lights at 3 dB below clipping. Front panel controls shall include Menu/Enter, Power, RF/AF/Next and Volume. The wireless receiver shall be powered from the AC mains using a supplied AC-DC adapter with a power consumption of 250 mA (12 VDC). The unit shall operate within a temperature range of +14° F to +122° F (-10° C to +50° C). Unit construction shall be black resin with dimensions of 8.27" W x 1.76" H x 7.09" D (210 mm x 44.6 mm x 180 mm) and weight of 5.2 lbs. (2.35 kg). Included accessories shall be two whip antennas and an external AC-DC adapter (120 VAC, 60 Hz). Up to two units shall be rack-mountable in one standard 19" rack height with an optional rack-mount kit.

## Wireless Microphone Transmitters

The handheld wireless microphone transmitter shall be dynamic type with a cardioid pattern and capable of a maximum input level of 145 dB SPL. The lapel microphone with bodypack shall be electret condenser type with a cardioid pattern and be capable of a maximum input level of 120 dB SPL. The transmission method shall be frequency modulation (F3E) with a PLL-based modulation system operating in the frequency range of 692 - 722 MHz with 64 selectable channels. The RF carrier power shall be no greater than 50 mW with maximum deviation of  $\pm 40$  kHz and a tone key frequency of 32.768 kHz. The units shall operate for a minimum of 10 hours using a 9 V (6LR61), alkaline type battery. A power LED shall glow continuously to indicate normal operation and flash to indicate low battery level (< 6 VDC). The transmitter shall utilize a 1/4 wave helical antenna. Transmitter controls shall include Power On/Off, Frequency Bank/Channel Select and Input Sensitivity Adjust. The bodypack shall include a TB-4M type input connector compatible with TA-4F type and a rotatable attachment clip. The transmitters shall operate within a temperature range of +14° F to +122° F (-10° C to +50° C). The transmitters shall be constructed of black resin with an additional rubber coating on the handheld transmitter. Dimensions shall be 2.06" dia. x 11" L (52.2 mm x 279.4 mm) for the handheld transmitter and 2.44" W x 5.59" H x 1.26" D (62 mm x 142 mm x 32 mm) for the lapel bodypack transmitter. The lapel microphone cable length shall be 4.76 ft. (1.45 m). The weight (with battery) shall be 0.60 lbs. (270 g) (handheld) and 0.33 lbs. (150 g) for the lapel/bodypack. Included accessories shall be a frequency-adjust screw driver and storage case, stand adapter (handheld) and rotatable lapel clip (lapel/bodypack).

## Antenna Distributor

The antenna distributor shall be suitable for use in both the VHF and UHF frequency ranges. The unit shall have two paralleled antenna inputs on each of the front and rear panels with BNC-type connectors, 75 ohm impedance and 9 VDC / 25 mA available for remote antennas. The unit shall have eight rear panel antenna outputs, four from each front/rear-panel antenna input, BNC-type connector and 75 ohm impedance. Four rear panel DC outputs, 12 VDC, shall be available for powering compatible wireless receivers. The front panel shall include Power On/Off and Power LED. The antenna distributor shall be powered from the AC mains (120 / 230 V AC selectable). The unit shall operate within a temperature range of +14° F to +122° F (-10° C to +50° C). Unit construction shall be black painted steel with dimensions of 16.54" W x 1.73" H x 8.02" D (420 mm x 44 mm x 203.8 mm) and weight of 7.83 lbs. (3.55 kg). Included accessories shall be one IEC power cord and four DC cables. The unit shall be rack-mountable and occupy one standard rack height with an optional rack-mount kit.

## Remote Dipole Antenna

The remote dipole antenna shall be suitable for use in the UHF frequency range of 680 - 880 MHz. The antenna gain shall be greater than 8 dB with a V.S. W. R. of less than 3. The output impedance shall be 75 ohm with an operating distance of 115 ft. (35 m) maximum using RG-6U cable or 164 ft. (50 m) maximum using RG-11U cable. The antenna power requirement shall be 7 - 12 VDC with current consumption of less than 24 mA supplied from the wireless receiver or antenna distributor. The unit shall have a mounting hole pitch of 3.29" (83.5 mm). The operating temperature shall be +14° F to +122° F (-10° C to +50° C). Unit construction shall be AES resin, off-white with dimensions of 4.13" W x 5.51" H x 4.96" D (105 mm x 140 mm x 126 mm) and weight of 0.66 lbs. (300 g).

The diversity wireless receiver shall be the TOA WT-4800.

The wireless handheld microphone shall be the TOA WM-4200.

The wireless lapel microphone with bodypack shall be the TOA WM-4300.

The antenna distributor shall be the TOA WD-4800.

The remote dipole antenna shall be the TOA YW-4500.

The wireless diversity receiver rack-mount kit shall be the TOA MB-WT1/MB-WT2.

The diversity antenna distributor rack-mount kit shall be the TOA MB-15B.