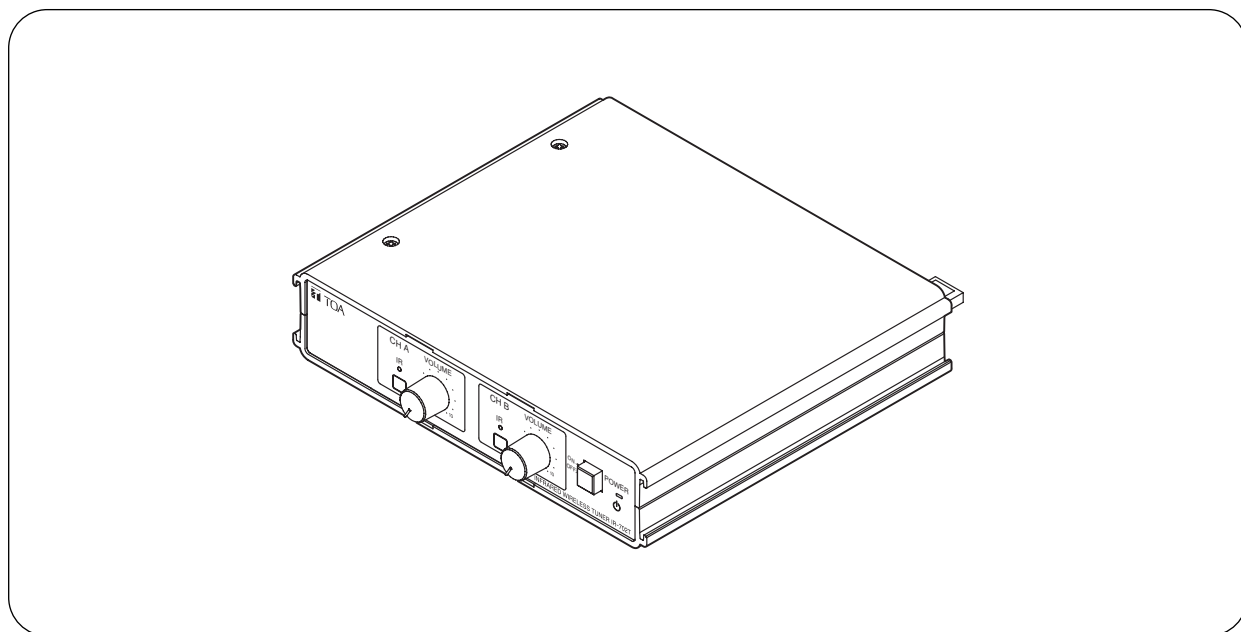


INFRARED WIRELESS TUNER

IR-702T



This manual describes the installation and usage of the entire system* using the IR-702T Infrared Wireless Tuner as well as the IR-702T.

* The system described in this manual is comprised of the following components:

- IR-702T Infrared Wireless Tuner
- IR-200M and IR-300M Infrared Wireless Microphones
- IR-500R, IR-510R, and IR-520R Infrared Wireless Receivers
- IR-200BC Battery Charger
- IR-200BT-2 Ni-MH Battery
- YW-1022 and YW-1024 Distributors

Note

For the installation and usage of the IR-702T when used in combination with the IR-700D Infrared Wireless Distributor, refer to the installation manual enclosed with the IR-700D.

Thank you for purchasing TOA's Infrared Wireless Tuner.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

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1. SAFETY PRECAUTIONS

**These precautions apply only to the IR-702T Infrared Wireless Tuner.
For precautions regarding other infrared microphone system devices, please refer to the instruction manual included with each device.**

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.

WARNING

Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

CAUTION

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

WARNING

When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.

When the Unit is in Use

- Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
 - If you detect smoke or a strange smell coming from the unit.
 - If water or any metallic object gets into the unit
 - If the unit falls, or the unit case breaks
 - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
 - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to qualified service personnel.

- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.
- Do not touch a power supply plug during thunder and lightning, as this may result in electric shock.

CAUTION

When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- Refer all installation work to the dealer from where the unit was purchased. Installation requires extensive technical knowledge and experience. Improper installation may result in personal injury or electric shock.

When the Unit is in Use

- Use the AC adapter supplied with the unit. Note that the use of other adapter may cause a fire.
- If dust accumulates on the power supply plug or in the wall AC outlet, a fire may result. Clean it periodically. In addition, insert the plug in the wall outlet securely.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Any modifications made to this device that are not approved by TOA Corporation may void the authority granted the user by the FCC to operate this equipment.

2. GENERAL DESCRIPTION

The IR-702T is a 2-channel infrared wireless tuner employing a fixed frequency system.

This tuner is combined with an infrared wireless microphone and an infrared wireless receiver to make up the infrared wireless microphone system.

The infrared microphone system eliminates problems with interference or eavesdropping, allowing simultaneous use in adjacent conference rooms or school classrooms.

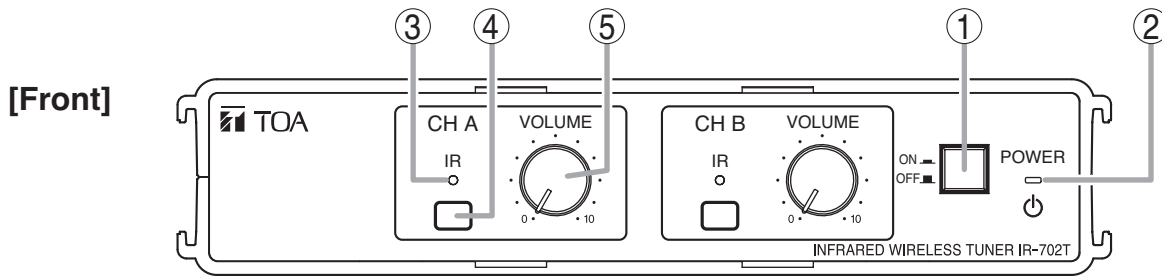
3. FEATURES

- The YW-1022 or YW-1024 Distributor allows up to 4 infrared wireless receivers to be installed.
- Up to 16 infrared wireless receivers can be installed with the use of the IR-700D Infrared Wireless Distributor.
- Since the IR-702T tuner uses a frequency band that does not interfere with that of the infrared conference system (TS-800 and TS-900 Series), both the infrared wireless microphone system and the conference system can be simultaneously installed in the same location.

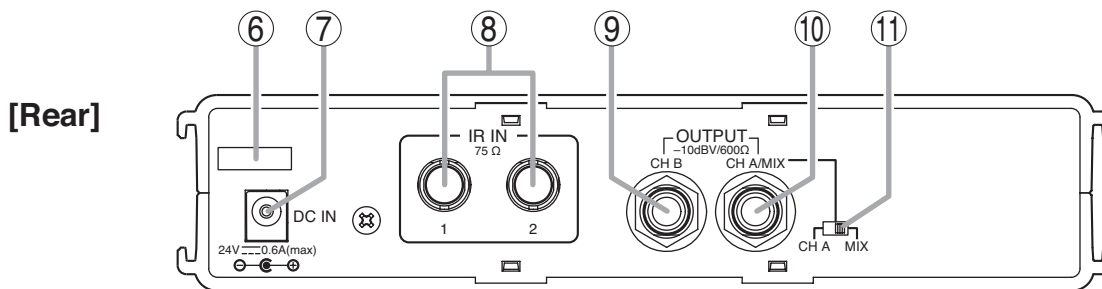
4. HANDLING PRECAUTIONS

- The supplied power supply cord is designed for exclusive use with the IR-702T. Never use it with other equipment.
- Install the IR-702T as far as possible from fluorescent lights, digital equipment, PCs and other devices that generate high-frequency noise.
- The IR-702T is an infrared wireless system which prevents transmitted contents from being revealed to people outside walls or other shields. However, since transmissions may be eavesdropped by malicious third parties, it is strongly suggested that the user take responsibility for carrying out measures to prevent eavesdropping. TOA assumes no responsibility for any damages that may be sustained without taking appropriate protective measures against eavesdropping.
- When cleaning, be sure to first switch off the tuner's power, then wipe with a dry cloth. If the tuner is extremely dirty, use a cloth moistened in a neutral detergent. Do not use benzene, thinner, alcohol and chemically-processed towels, as they can cause damage to the tuner's components and parts.

5. NOMENCLATURE AND FUNCTIONS



Note: Functions of the (3), (4), and (5) for the Channel A also apply to the Channel B (CH-B).



1. Power switch

Press this switch to turn on the power. To turn off the power, press this switch again.

2. Power indicator

Lights when the power is switched on.

3. Reception indicator [IR]

Lights during reception.

4. Color label attachment area

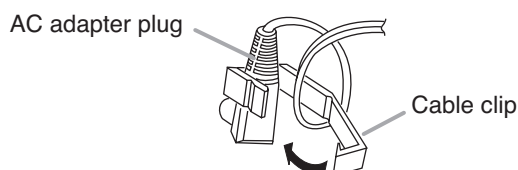
Attach a color label (accessory) of the same color as that of the infrared wireless microphone to be used in combination with the tuner.

5. Volume control knob

Adjusts the sound volume of the infrared wireless microphone.

6. Cable Clip

Run the AC adapter cable through this clip to prevent its plug from being removed.



7. DC inlet [DC IN]

Connect the supplied AC adapter.

8. Receiver input terminals [IR IN]

Connect the infrared wireless receiver or the distributor. Up to 4 infrared wireless receivers can be connected with the use of the YW-1022 (2-Branch Distributor) or the YW-1024 (4-Branch Distributor).

Note that only one YW-1022 or YW-1024 Distributor can be connected per input channel. Up to 16 infrared wireless receivers can be connected with the use of the IR-700D Infrared Wireless Distributor. For cable connections when using the IR-700D, refer to the installation manual enclosed with the IR-700D.

9. CH B output terminal [CH B]

Connect this terminal to the amplifier line input terminal for public address applications. This terminal outputs only the CH-B audio signal.

10. CH A/MIX output terminal [CH A/MIX]

Connect this terminal to the amplifier line input terminal for public address applications. This terminal outputs either the CH-A audio signal alone or a mixed CH-A and CH-B audio signal depending on the setting of the CH A/MIX output selector switch (11).

11. CH A/MIX output selector switch

• CH A

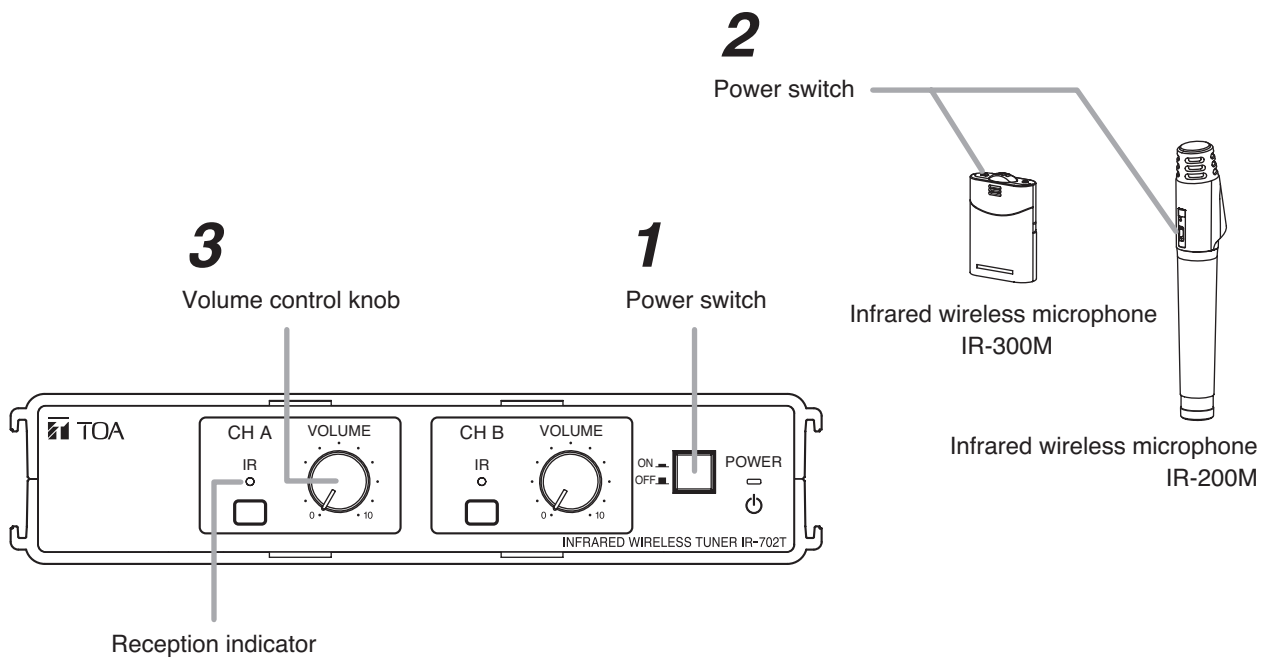
Only the CH-A signal is delivered at the CH A/MIX output terminal (10).

• MIX (default position)

Mixed CH-A and CH-B signals are delivered at the CH A/MIX output terminal (10).

6. OPERATIONS

Note: The example here shows the operation of the Channel A. This operation also applies to the Channel B.



Step 1. Turn on the unit's power switch.

Step 2. Turn on the infrared wireless microphone's power switch.
The reception indicator lights for the channel receiving a signal.

Note

If the reception indicator does not light, the infrared wireless microphone is not set to the same channel as that of the infrared wireless tuner. For channel settings, please refer to the instruction manual enclosed with the infrared wireless microphone.

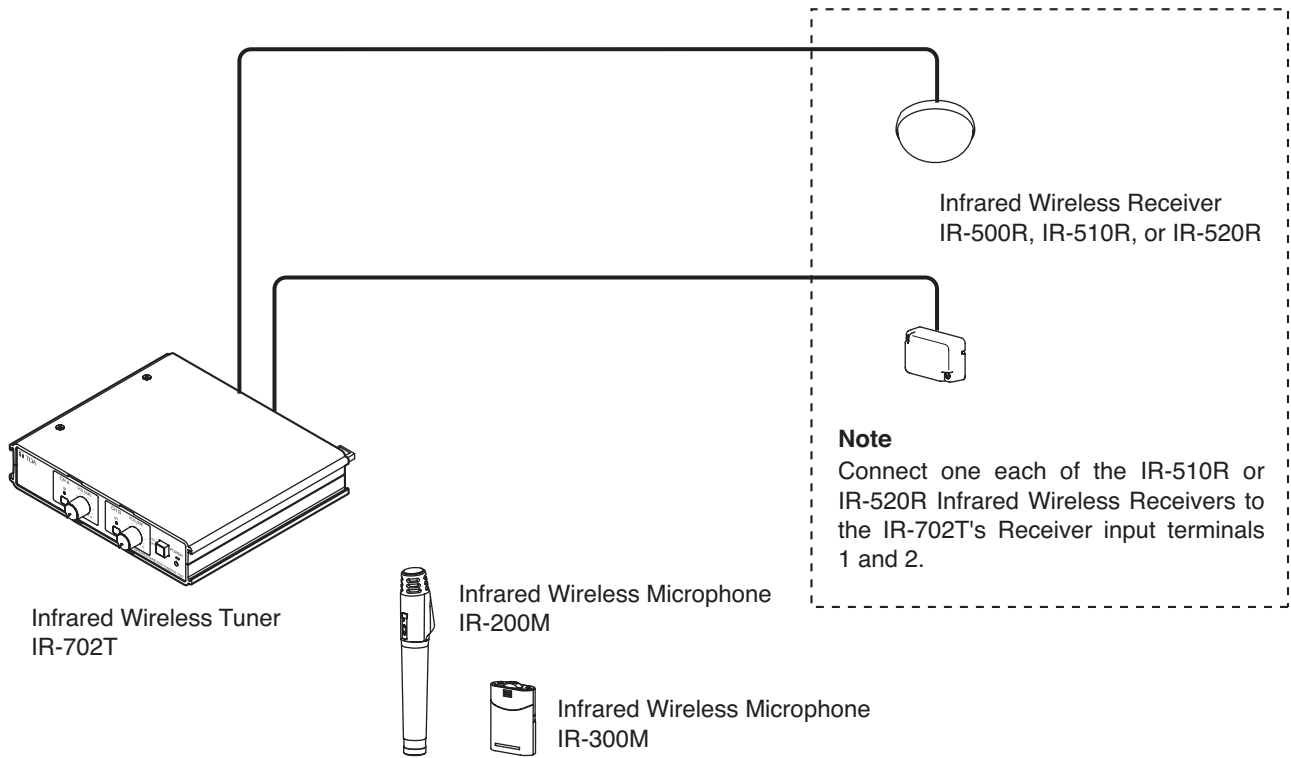
Step 3. Adjust the volume control knob for an appropriate output sound.

Note

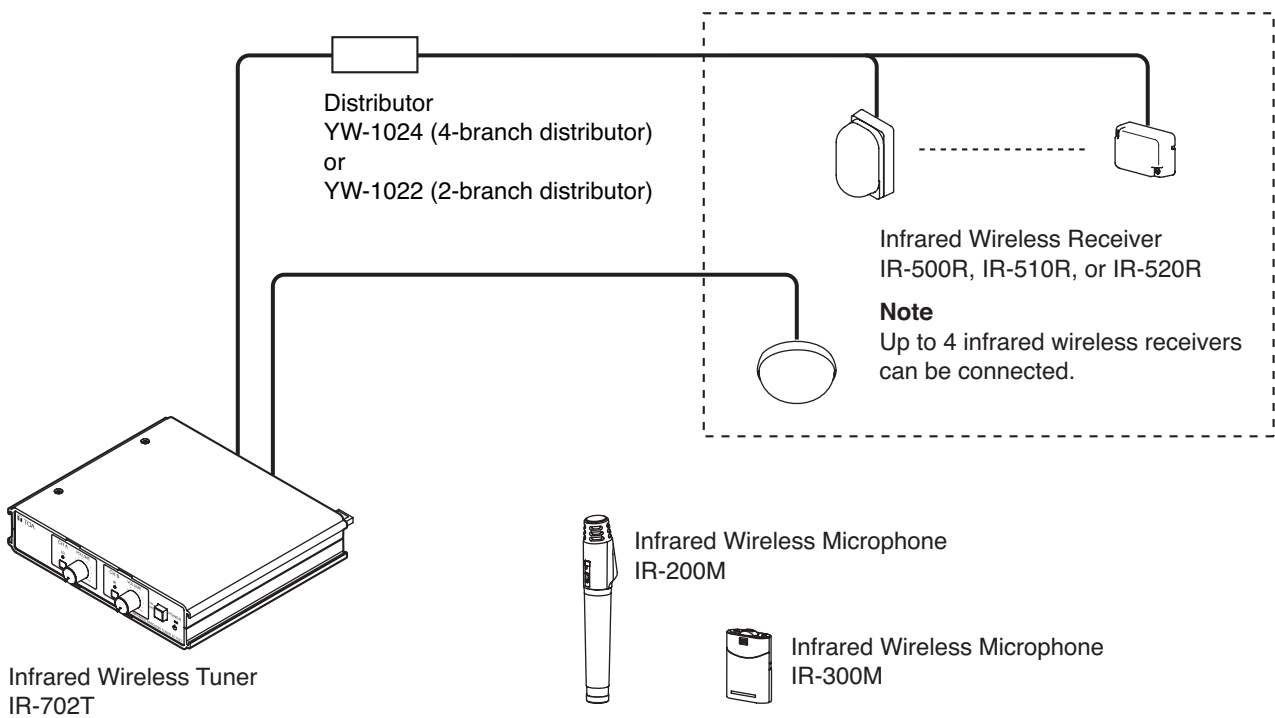
Output signal distortion is more likely to increase as the volume control knob is rotated beyond the "2-o'clock" position.

7. SYSTEM CONFIGURATION EXAMPLES

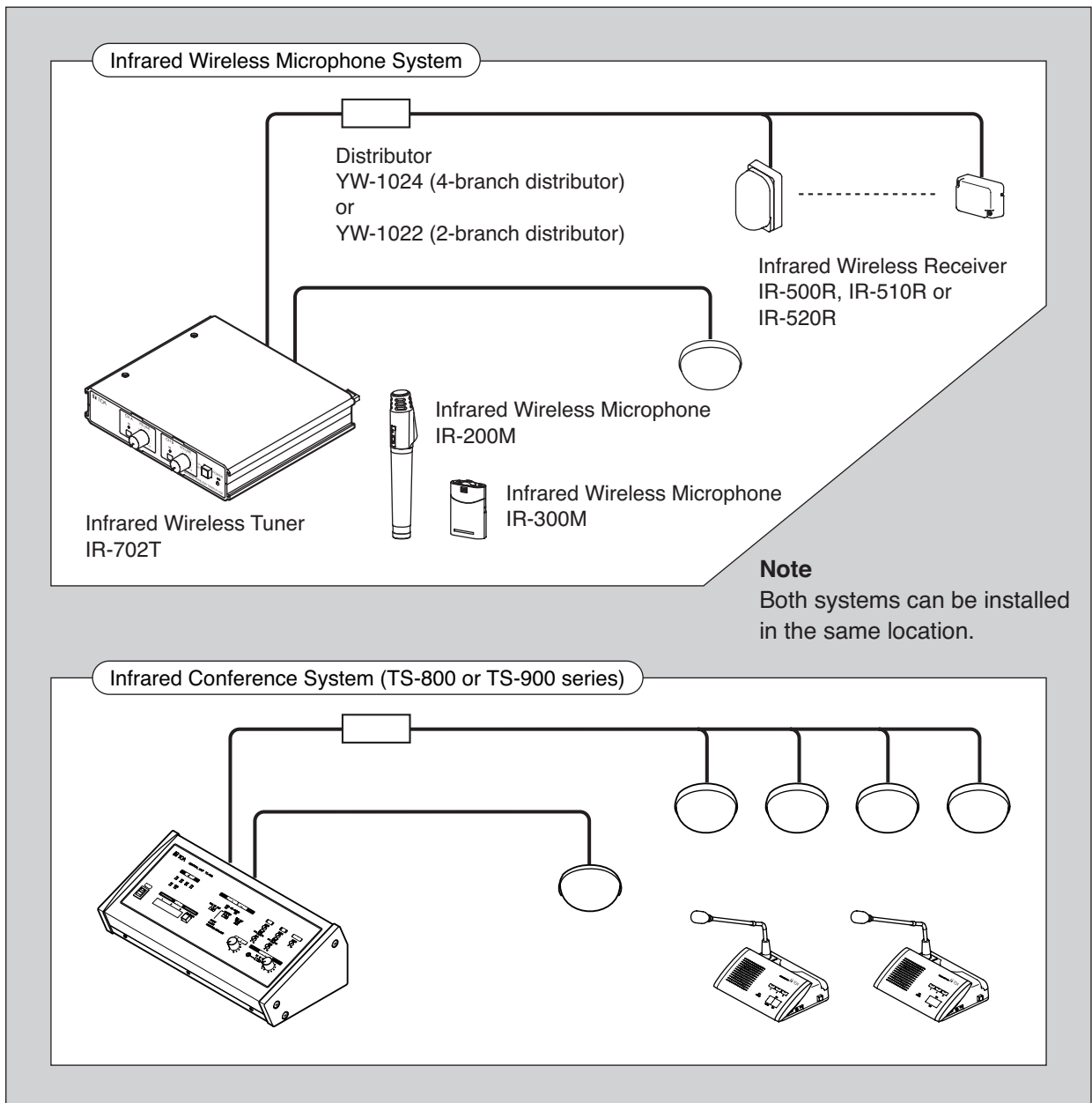
7.1. Using 2 Infrared Wireless Receivers



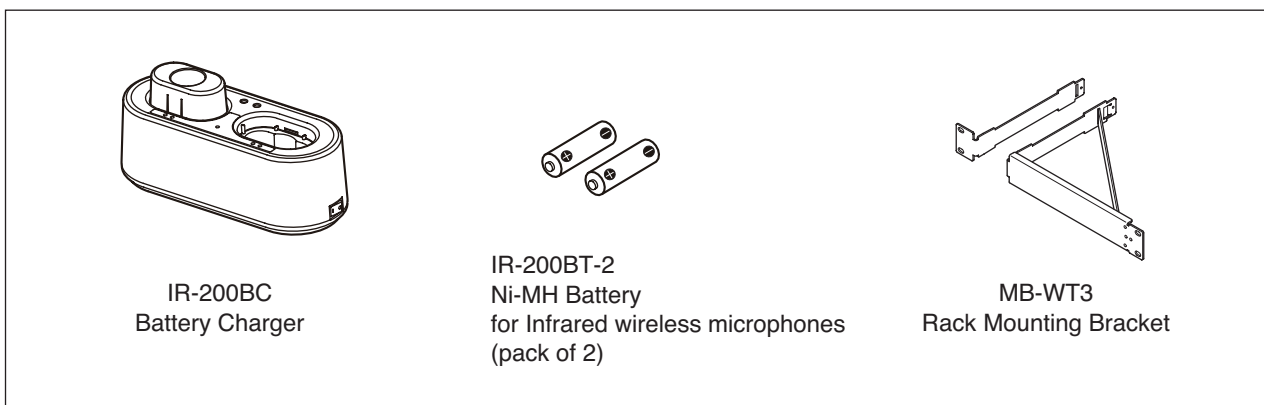
7.2. Using 4 Infrared Wireless Receivers



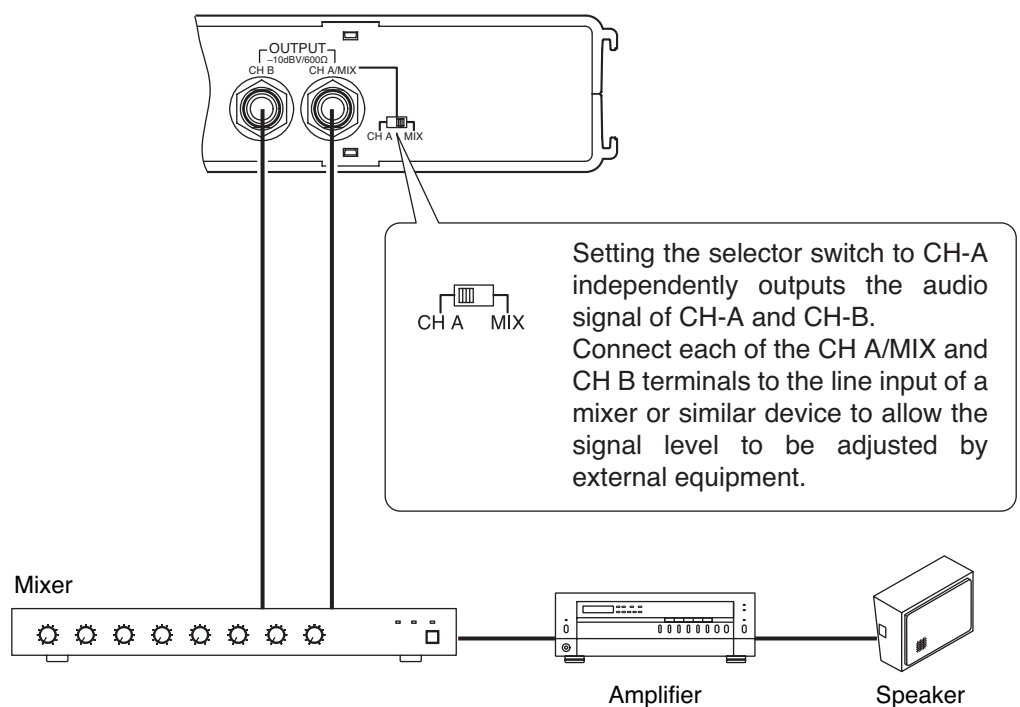
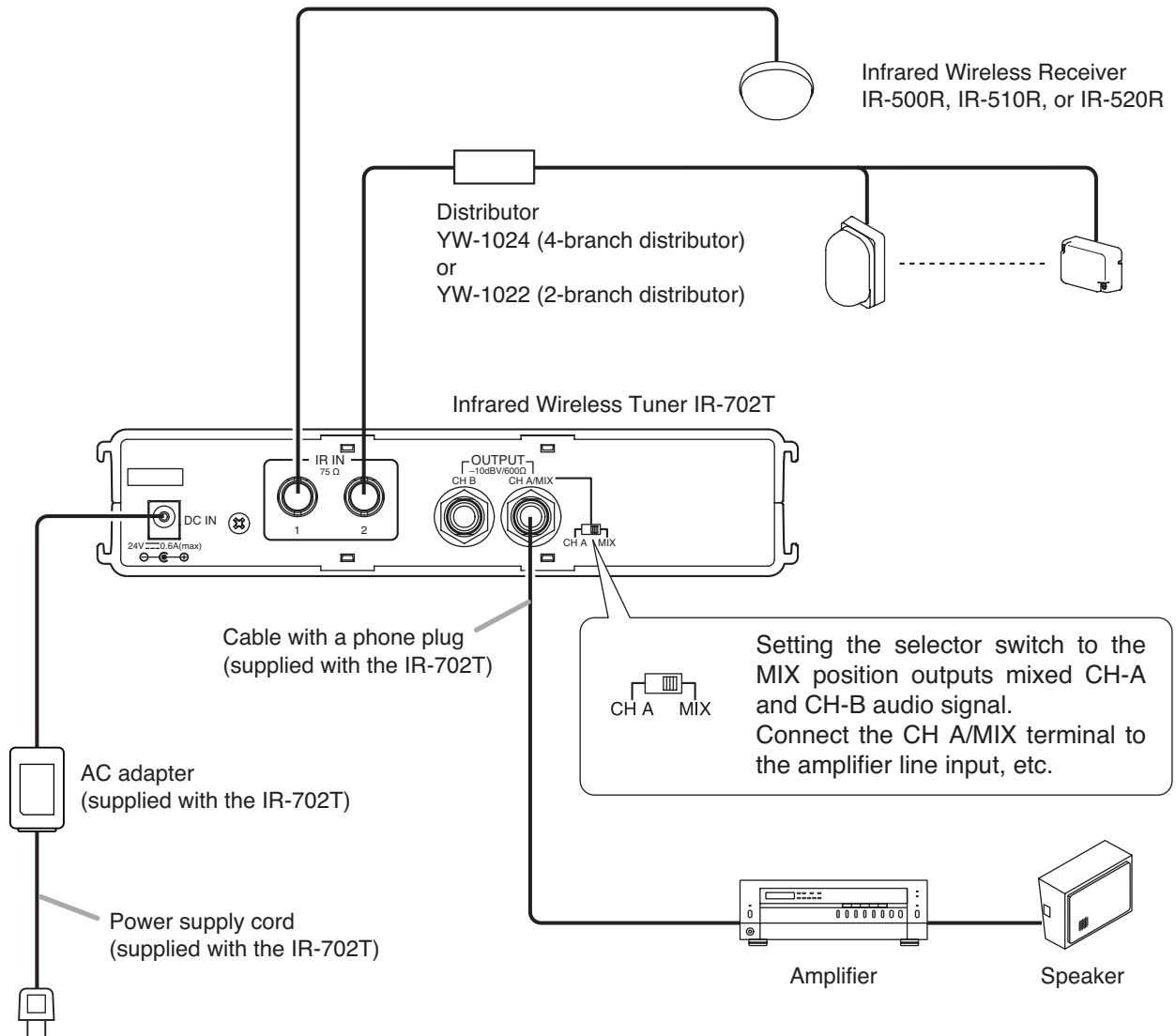
7.3. Simultaneous Use of the Infrared Wireless Microphone System and the Infrared Conference System



[Infrared Wireless Microphone System-related Equipment]



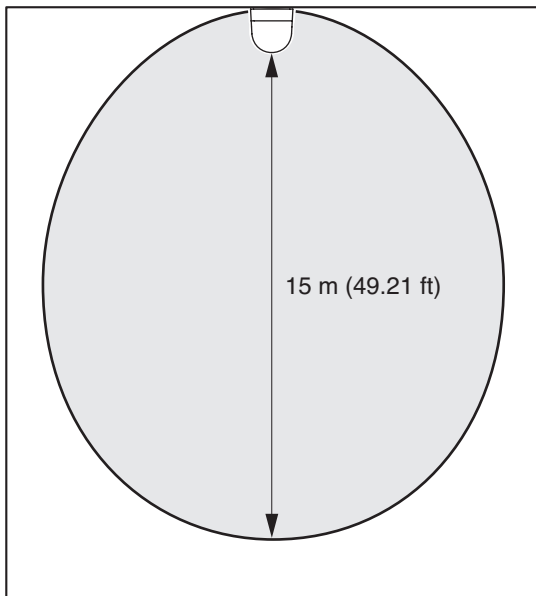
8. CONNECTION EXAMPLE



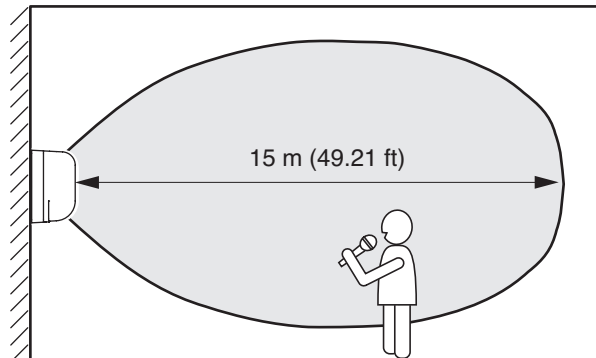
9. INFRARED WIRELESS RECEIVER COVERAGE AREA

9.1. IR-500R and IR-520R (Wall-mounted and microphone stand-mounted type)

[Horizontal direction]



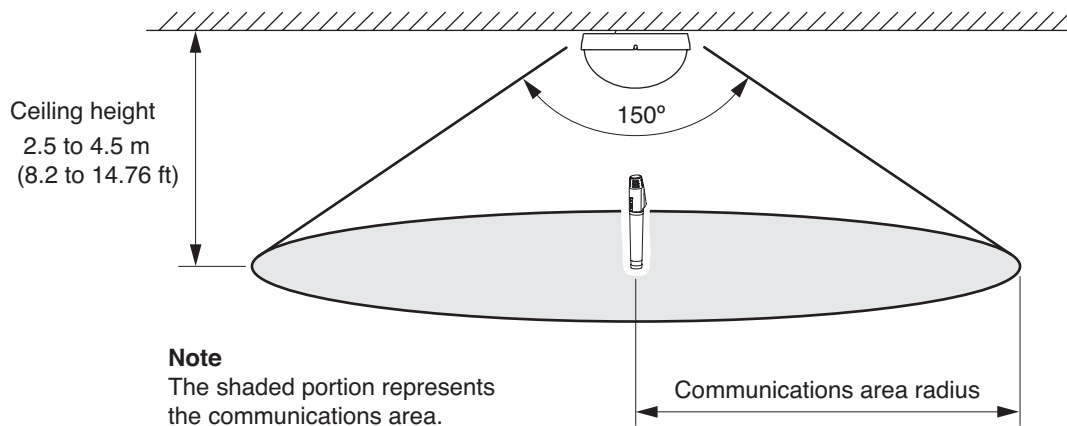
[Vertical direction]



Note

The shaded portion represents the communications area.

9.2. IR-510R (Ceiling-mounted type)



Note

The shaded portion represents the communications area.

Applicable model	Ceiling height	Communications area radius
IR-510R	2.5 m (8.20 ft)	About 7 m (23 ft)
	3.0 m (9.84 ft)	
	3.5 m (11.48 ft)	About 6.5 m (21.5 ft)
	4.0 m (13.12 ft)	
	4.5 m (14.76 ft)	About 6 m (20 ft)

10. INSTALLING THE INFRARED WIRELESS RECEIVER

10.1. Installation Precautions

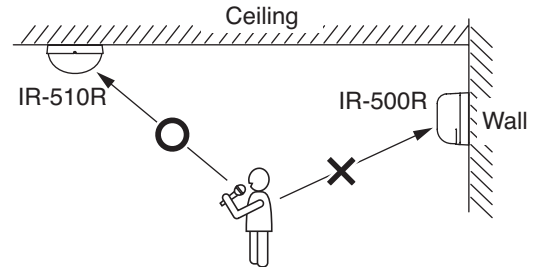
Because the infrared wireless microphone and receiver have their own directivity for infrared transmission and reception, take care that they are installed and operated under stable communication conditions.

- **Number of infrared wireless receivers**

Use 2 or more receivers.

- **Installation Position**

- The infrared beam can be blocked by a human body or other objects. To avoid this, install multiple infrared wireless receivers that can be viewed from the infrared wireless microphone.
- Install multiple infrared wireless receivers so as to allow constant communications between the infrared microphone and at least one infrared wireless receiver in any specific situation. When installing the infrared wireless receivers, take care that they can sufficiently cover the communications area from different angles. If the infrared wireless microphone is used in the communications area where only one infrared wireless receiver is installed, communications may be interrupted when the infrared beam is blocked by a human body or other objects.
- Install the infrared wireless receivers above user height wherever possible.
- Install the infrared wireless receivers at a height that protects them from damage that could result from being hit by an object.



Note

In this figure, the IR-510R receives a signal from the infrared wireless microphone because there is no shield between the two. However, communication to the IR-500R could be interrupted if the user's body blocks the beam like a shield.

- **Distance between the infrared wireless microphone and receiver**

Malfunctions or noise could result from the infrared wireless microphone and receiver being too close to each other. Keep the infrared wireless microphone at least 2 m (6.56 ft) away from the receiver.

- **Radio Noise**

Do not install the infrared wireless receiver and cables close to devices that can generate radio noise, such as: Inverter-powered equipment (fluorescent lights, air-conditioners, etc.), digital equipment, PCs and other computer equipment.

- **Infrared Receiver Input Terminal**

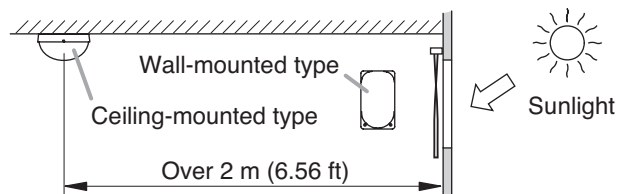
Take care not to short-circuit the infrared wireless receiver's input terminal and the infrared wireless tuner's receiver input terminal, as the power supply could be shorted, potentially resulting in equipment failures.

- **Sunlight and Fluorescent Lighting**

System malfunctions or noise could result from installing the infrared wireless receiver in locations exposed to sunlight, fluorescent lighting or other infrared generating sources. When installing the receiver, make the following arrangements so that it is not exposed to infrared sources:

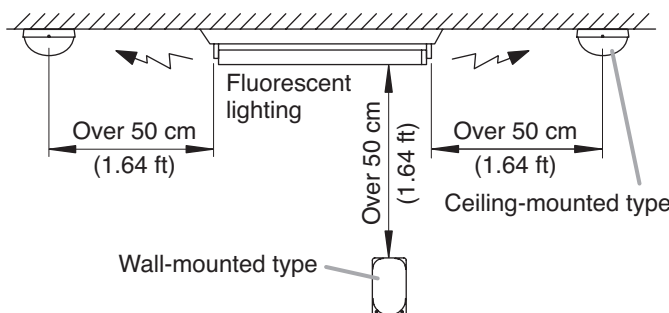
[Avoid Sunlight]

- To prevent equipment from being directly exposed to sunlight, block the sunlight using curtains or window shades.
- When mounting the receiver to a ceiling, keep it at least 2 m (6.56 ft) away from the window.



[Install Away From Fluorescent Lighting]

When installing the receiver, keep it at least 50 cm (1.64 ft) away from the fluorescent lighting.



[Avoid installing close to other infrared sources shown below]

- Lighting device
- Liquid crystal projectors, overhead projectors and incandescent lights
- Plasma displays
- Remote control units, infrared LAN and other infrared devices
- Dimmers

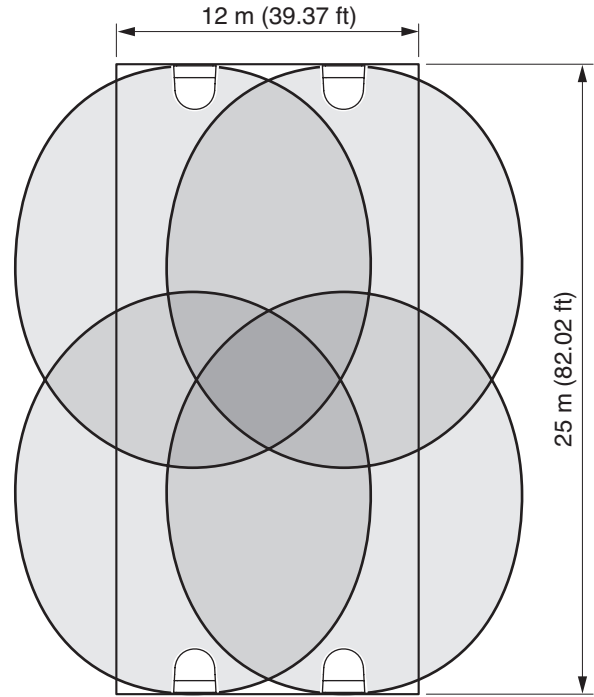
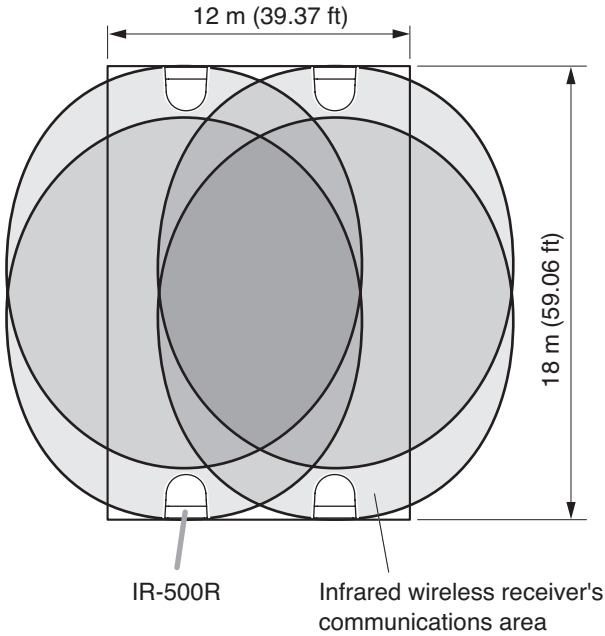
10.2. Infrared Wireless Receiver Installation Examples

The receiver's communications area differs depending on such environmental conditions as the ceiling height. (Refer to p. 10 "Infrared Wireless Receiver Coverage Area.")

10.2.1. Installing 4 IR-500Rs and IR-520Rs

Note

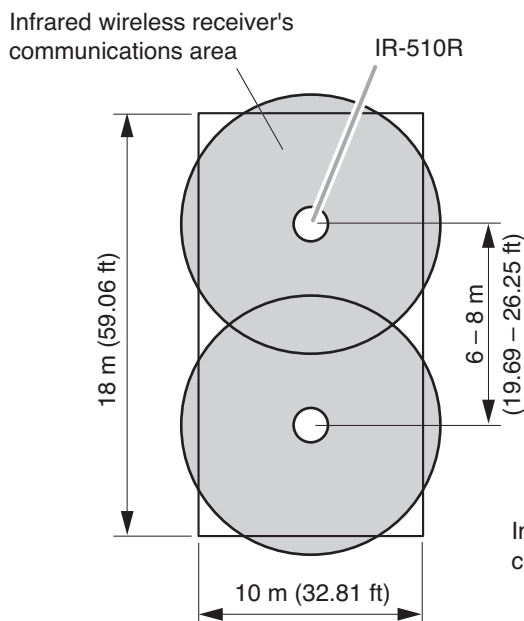
In a rectangular room where the usage area is wider than the infrared receiver's communication distance, install the receivers on the opposite side as well.



10.2.2. Installing 2 IR-510Rs

Note

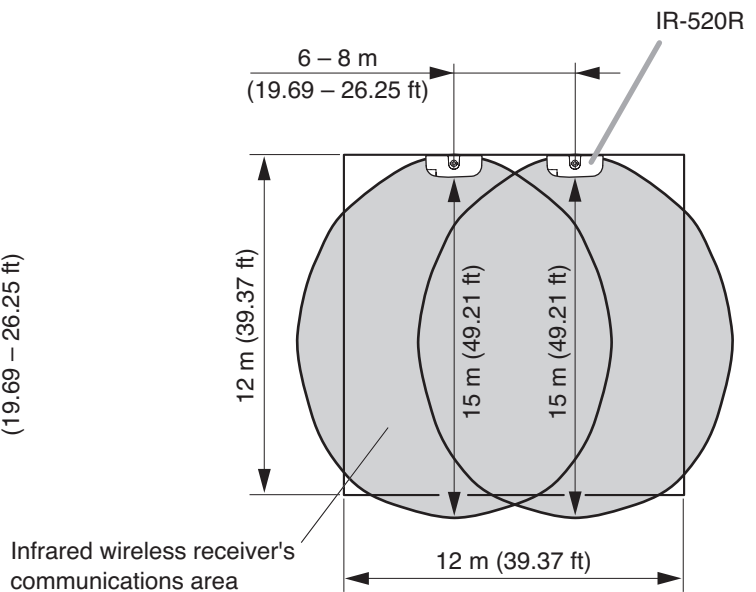
Install these 6 m (19.69 ft) to 8 m (26.25 ft) apart so that each receiver's communications area overlaps with each other.



10.2.3. Installing 2 IR-520Rs

Note

Install these 6 m (19.69 ft) to 8 m (26.25 ft) apart so that each receiver's communications area overlaps with each other.



10.3. When Simultaneously Using Both the Infrared Wireless Microphone System and the Infrared Conference System

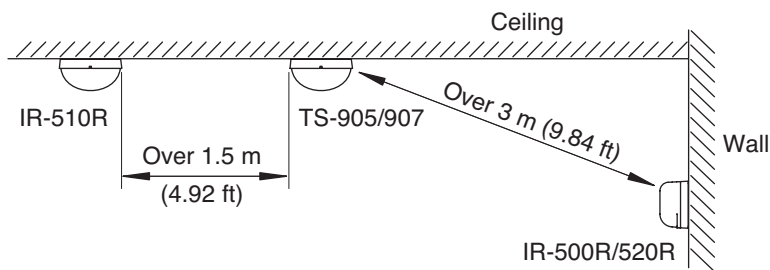
The appropriate distance between the infrared wireless receiver (IR-500R, IR-510R, and IR-520R) of the infrared wireless microphone system and the transmitter/receiver unit (TS-905 and TS-907) of the infrared conference system differs depending on the size and layout of the room. When simultaneously installing the two systems in the same location, use the following guidelines on distance:

[Distance between the IR-500R/520R and the TS-905/TS-907]

Keep both units at least 3 m (9.84 ft) away from each other.

[Distance between the IR-510R and the TS-905/TS-907]

Keep both units at least 1.5 m (4.92 ft) away from each other.



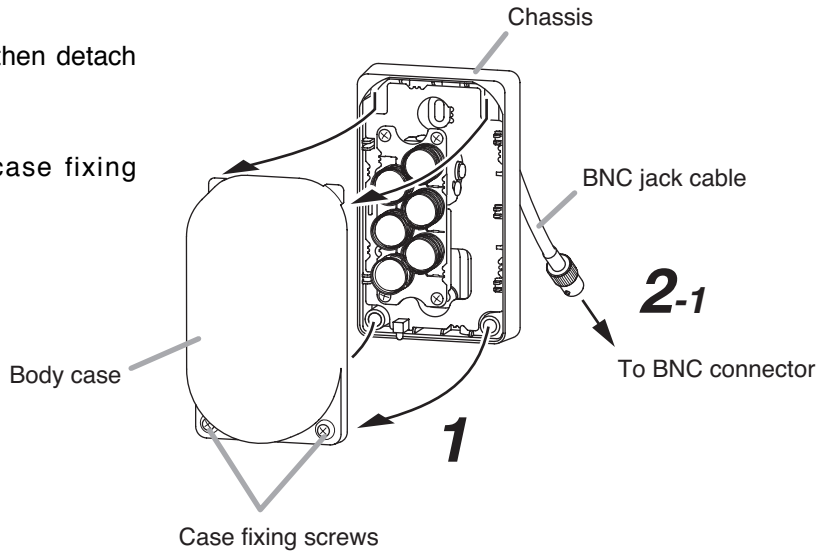
11. INSTALLING THE IR-500R INFRARED WIRELESS RECEIVER

11.1. Wall Mounting

Step 1. Loosen 2 case fixing screws, then detach the body case with screws.

Note

No need to remove these case fixing screws.



Step 2. Connect the coaxial cable.

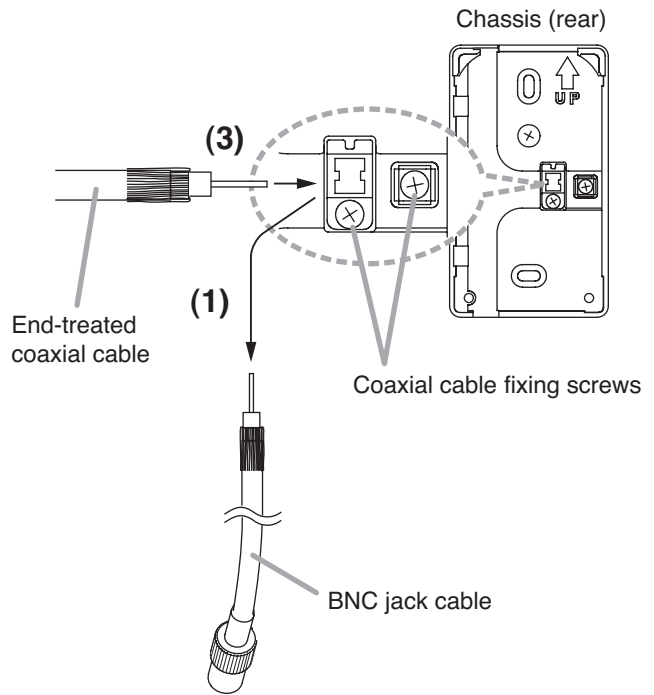
2-1. When using the BNC connector
Connect the BNC cable to the BNC jack cable connected to the chassis.

Note

Applicable coaxial cable is RG-59/U or RG-6/U.

2-2. When connecting the coaxial cable directly

(1) Loosen 2 coaxial cable fixing screws on the chassis, then disconnect the BNC jack cable.

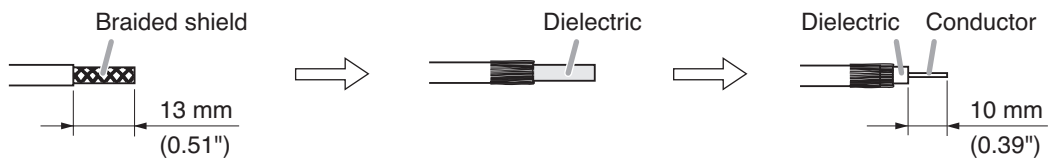


(2) Treat the coaxial cable end.

Strip the jacket 13 mm (0.51") from the end of the coaxial cable.

Unravel the braided shield and turn it back.

Strip the dielectric 10 mm (0.39") from the cable end.



(3) Insert the end-treated cable, then securely tighten the coaxial cable fixing screws.

Step 3. Install the chassis in an electrical box or on a wall.

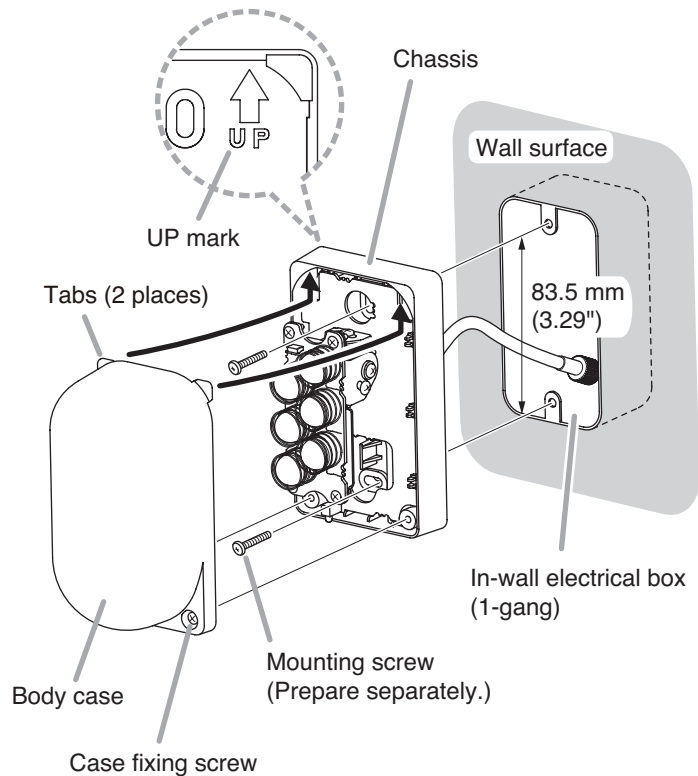
3-1. When installing in an electrical box

- (1) Install the chassis, with its UP mark facing upward, in an electrical box.

Note

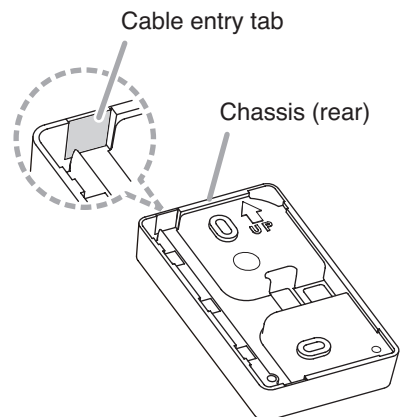
Since no mounting screws are supplied with the IR-500R, separately prepare screws that are appropriate for the electrical box used.

- (2) Adjust the reception angle referring to p. 16 – 17.
- (3) Replace the body case by inserting the tabs on its top into the upper inside of the chassis, then retighten the case fixing screws to secure the body case.



3-2. When directly installing on a wall

- (1) Cut out the cable entry tab in the chassis using nippers. One each of cable entry tabs, which are relatively thin, is provided in the top and bottom surface of the chassis. Cut out the entry tab as needed.

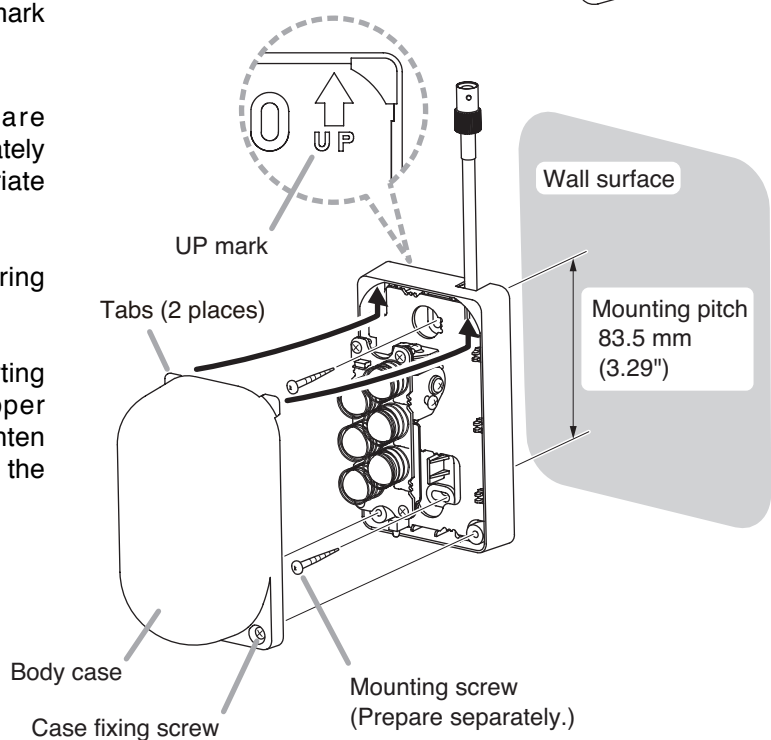


- (2) Install the chassis, with its UP mark facing upward, on a wall.

Note

Since no mounting screws are supplied with the IR-500R, separately prepare screws that are appropriate for the construction of wall.

- (3) Adjust the reception angle referring to p. 16 – 17.
- (4) Replace the body case by inserting the tabs on its top into the upper inside of the chassis, then retighten the case fixing screws to secure the body case.



11.2. Adjusting the Reception Angle

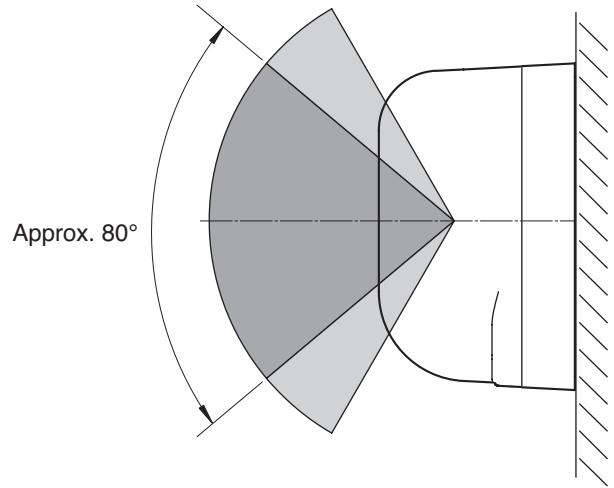
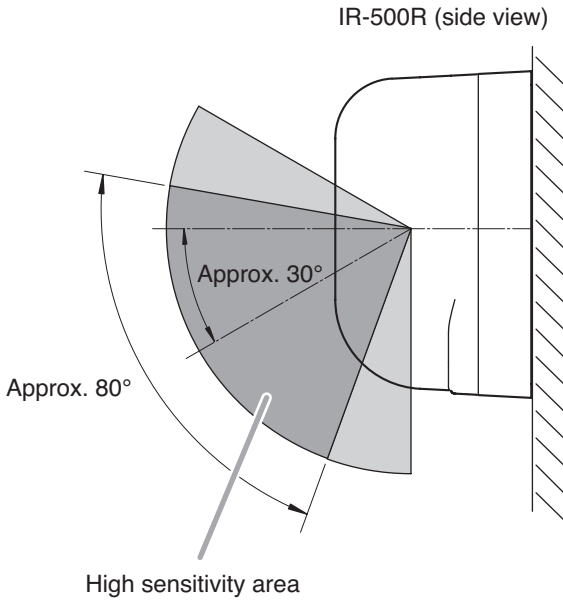
Communications area of the IR-500R can be adjusted both vertically (from 0° to approx. 30° downward) and horizontally (approx. 30° to the right or left) by moving its reception section. Adjust the angle depending on the installation location.

11.2.1. IR-500R's receiving angle image

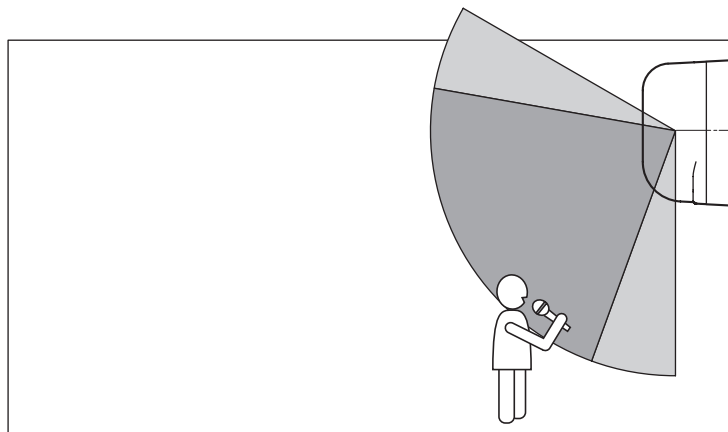
[Vertical direction]

(Factory-preset : approx. 30° downward)

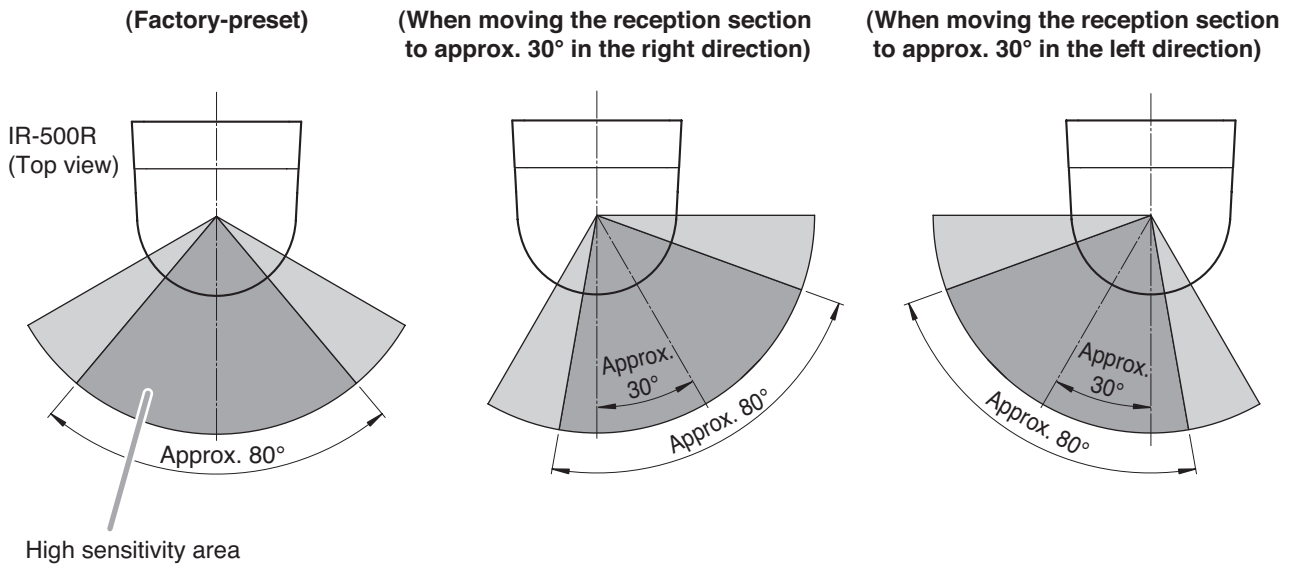
(When moving the reception section to vertical 0° position)



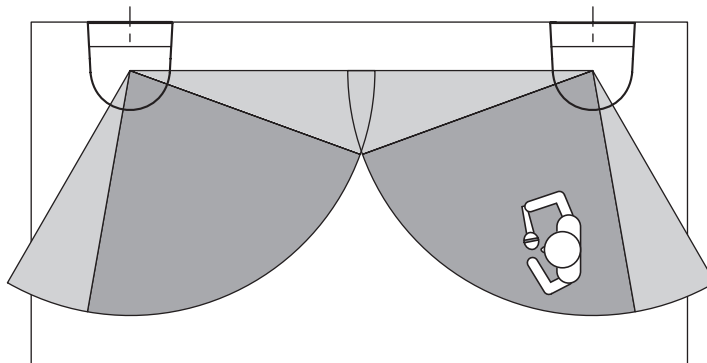
**Adjustment example in vertical direction
(when installing the IR-500R at a higher position)**



[Horizontal direction]



**Adjustment example in horizontal direction
(when installing the IR-500Rs at the corners of the room)**



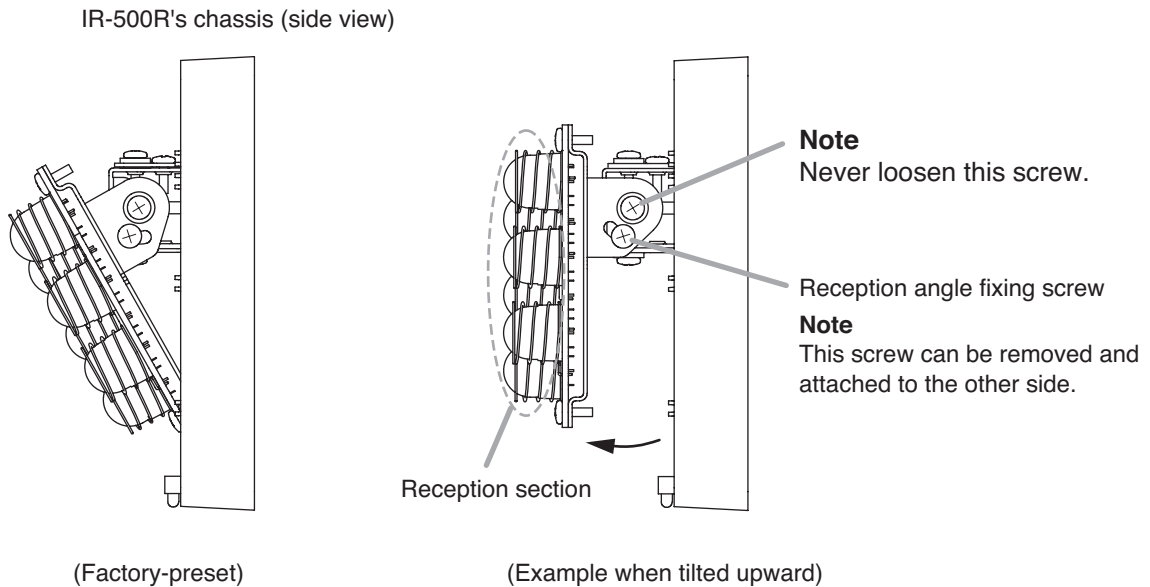
Correct the reception section's vertical angle first, then the horizontal angle.

11.2.2. Correcting the vertical angle

Step 1. Loosen the reception angle fixing screw (for vertical).

Step 2. Direct the reception section down or up towards the area, where the infrared wireless microphones are used, by hand.

Step 3. Retighten the loosened screw in Step 1.

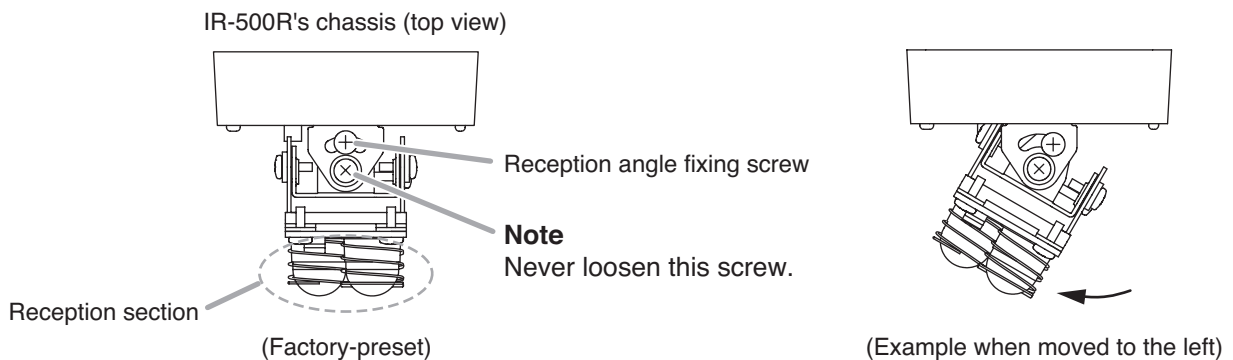


11.2.3. Correcting the horizontal angle

Step 1. Loosen the reception angle fixing screw (for horizontal).

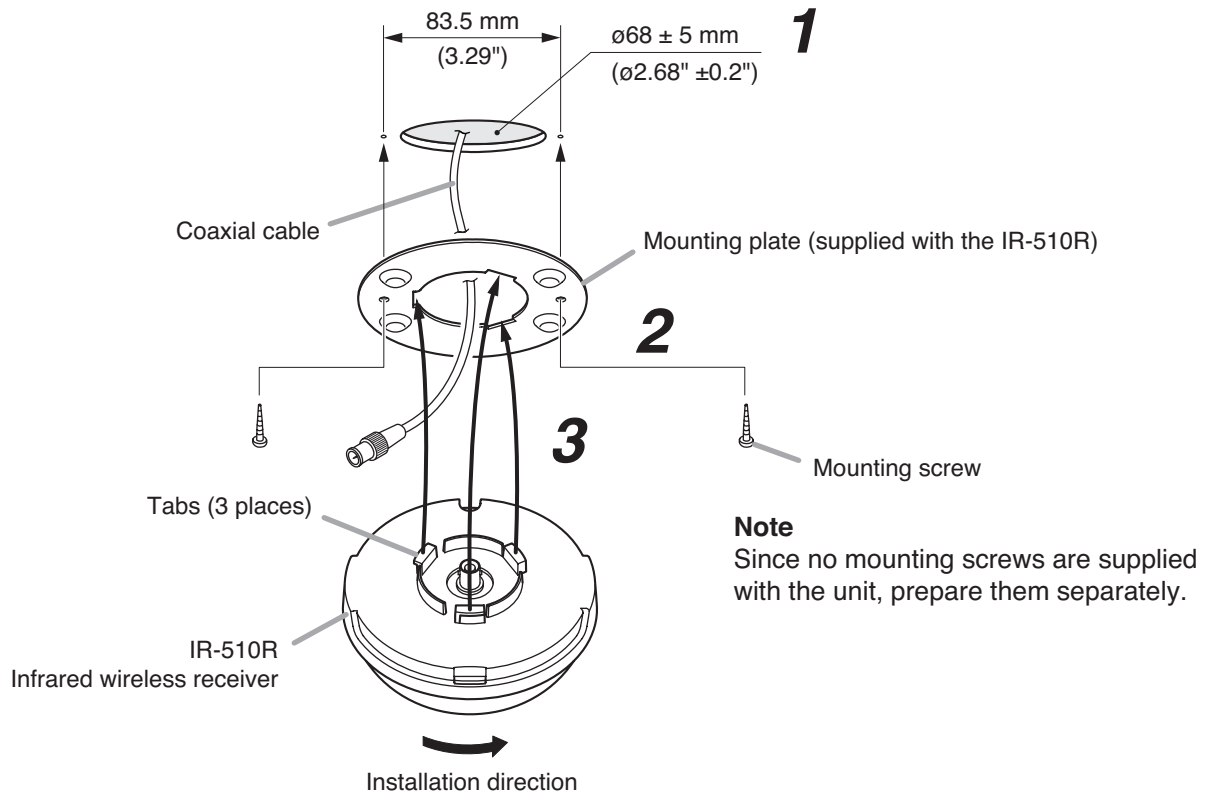
Step 2. Direct the reception section to the left or right towards the area, where the infrared wireless microphones are used, by hand.

Step 3. Retighten the loosened screw in Step 1.



12. INSTALLING THE IR-510R INFRARED WIRELESS RECEIVER

12.1. Ceiling Mounting



Step 1. Make a mounting hole of 68 mm (2.68") in the ceiling board.

Step 2. Install the mounting plate (supplied with the IR-510R) to the ceiling board.

Notes

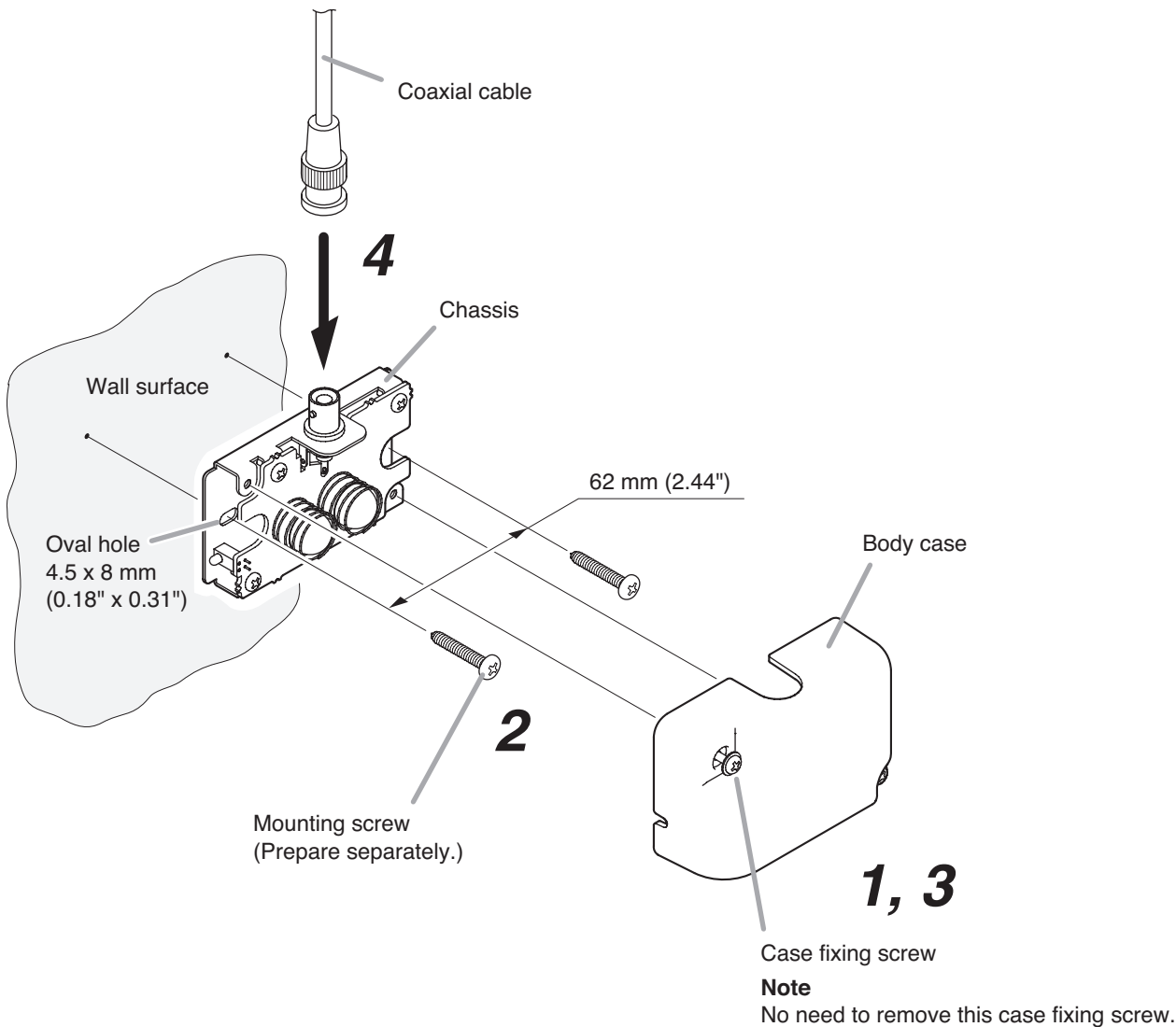
- The IR-510R offers a mounting pitch of 83.5 mm (3.29") and can be mounted in an electrical box as well.
- Use an electrical box in the case of open wiring.
- Use a BNC L connector or an L-shaped adapter connector when mounting the receiver in an electrical box.

Step 3. After wiring completion, attach the receiver to the mounting plate.

Align the receiver tabs (3 places) with the notches in the plate, then rotate the receiver clockwise to full stop.

13. INSTALLING THE IR-520R INFRARED WIRELESS RECEIVER

13.1. Wall Mounting



Step 1. Loosen 2 case fixing screws, then detach the body case.

Step 2. Install the chassis to a wall.

Note

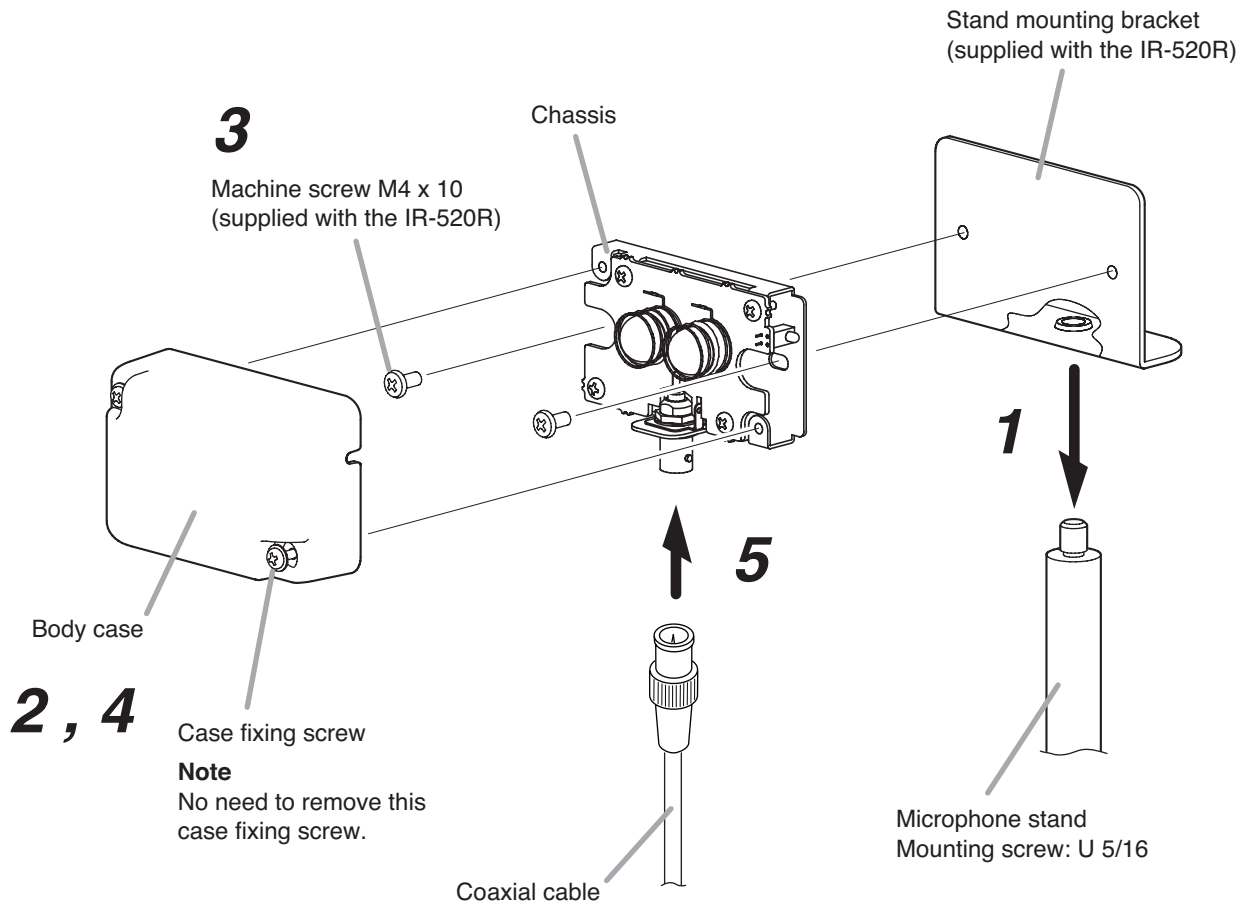
Since no mounting screws are supplied with the unit, prepare them separately.

Step 3. Attach the body case to the chassis.

Retighten 2 loosened screws in **step 1**.

Step 4. Connect the coaxial cable.

13.2. Mounting on a Microphone Stand



Step 1. Attach the stand mounting bracket (supplied with the IR-520R) to a microphone stand.
Applicable screw size: U 5/16

Step 2. Loosen 2 case fixing screws, then detach the body case.

Step 3. Secure the chassis to the stand mounting bracket using 2 machine screws M4 x 10 (supplied with the IR-520R).

Step 4. Attach the body case to the chassis.

Step 5. Connect the coaxial cable.

Note

For the microphone stand installation, refer to the instruction manual attached to the microphone stand.

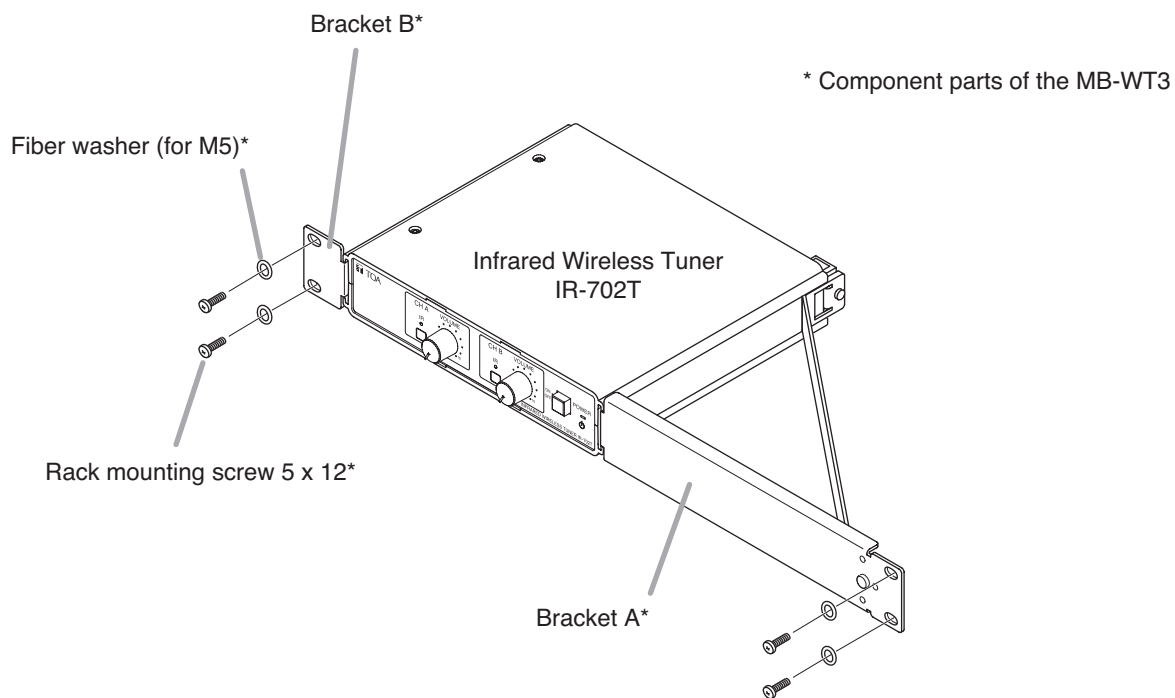
14. INSTALLING THE INFRARED WIRELESS TUNER

14.1. Mounting in a Rack

Use the optional MB-WT3 Mounting Bracket when installing the unit in a rack.

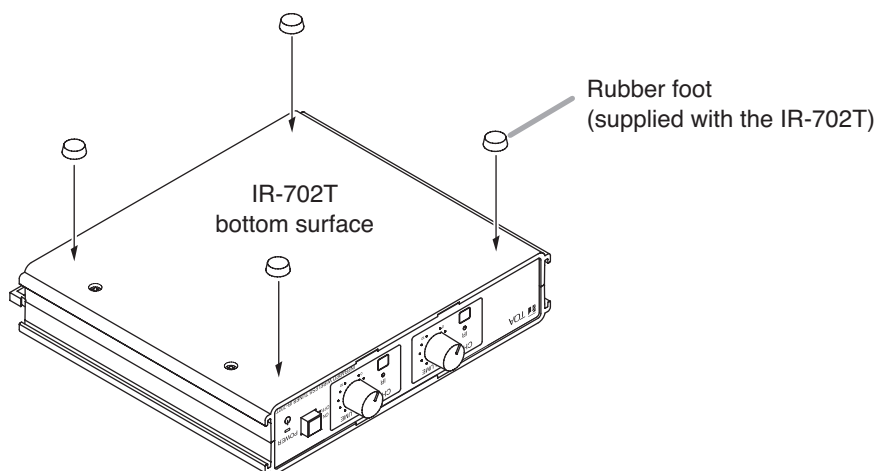
Note

For the mounting bracket installation, refer to the instruction manual attached to the MB-WT3.



14.2. Mounting on a Desk

When installing the unit on a desk, secure 4 supplied rubber feet to the unit's bottom.

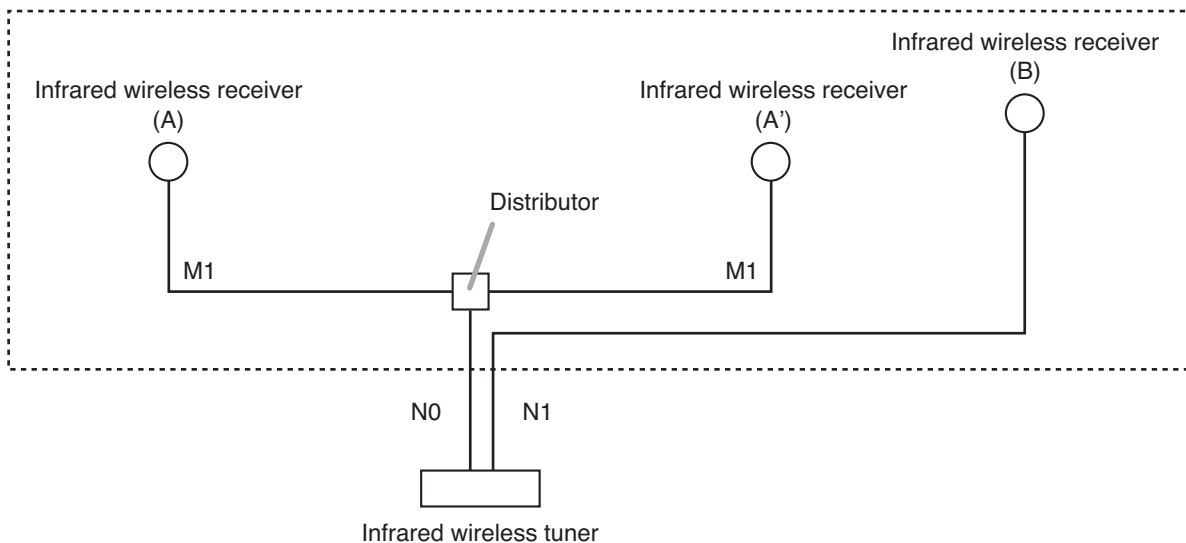


15. INFRARED WIRELESS RECEIVER TO TUNER WIRING

15.1. Wiring Precautions

When multiple infrared wireless receivers have received an infrared signal from the infrared wireless microphone, the reception level increases if the signals input to each receiver are in phase with each other. However, the reception level could decrease if the signals are out of phase.

- To match signal phases, make each corresponding cable the following length:
Cable length from each infrared wireless receiver to the tuner: $M1 + N0 = N1$
where M1, N0, and N1 are:
M1: Cable length between the receiver (A or A') and distributor
N0: Cable length between the distributor and tuner
N1: Cable length between the receiver (B) and tuner



- The maximum cable length between each Infrared Wireless Receiver and tuner differs depending on the type of coaxial cable to be used.
Take care not to exceed the maximum cable length. (Refer to p. 10 "Supplementary Remarks.")

15.2. When Using the Distributor YW-1022/1024

- The YW-1022 is a 2-branch distributor and the YW-1024 is a 4-branch distributor.
- Some idle YW-1024 distribution terminals may result, depending on wiring, however this presents no problem.
- Avoid connecting 2 or more distributors in series. Connecting them in series increases high-frequency signal loss, potentially resulting in system malfunctions.
- Even if a system includes infrared wireless receivers connected to the tuner via a distributor and those directly connected to the tuner, this presents no problem.

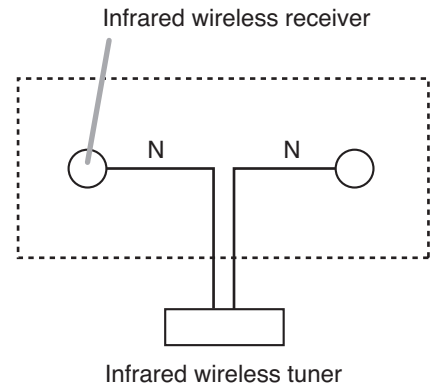
15.3. When Using the Infrared Wireless Distributor IR-700D

Wiring method for the IR-700D Infrared Wireless Distributor differs from that for the YW-1022 and YW-1024 Distributors. For the wiring method of the system using the IR-700D, refer to the instruction manual enclosed with the IR-700D.

15.4. Wiring Examples

[Example 1]

When installing multiple infrared wireless receivers in the same location, make all "N" distances (cable length between receiver and tuner) equal.

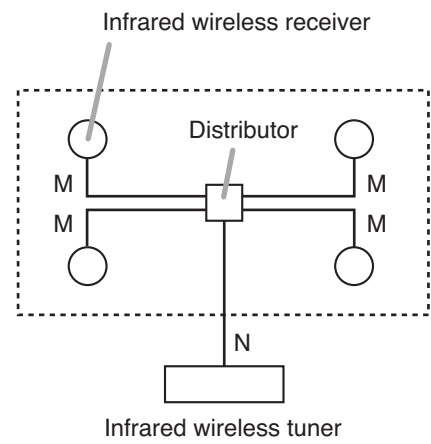


[Example 2]

When installing both the infrared wireless receiver and distributor in the same location, make all "M" distances (cable length between receiver and distributor) equal.

Notes

- To facilitate unification of coaxial cable lengths, it is recommended that wiring from the tuner to the ceiling-mounted distributor should be performed using a single cable.
- The use of coaxial cables cut to an even length that is slightly longer than required easily makes all "M" distances of wiring in the ceiling identical.



16. SUPPLEMENTARY REMARKS

(How to find a maximum cable length from infrared wireless tuner to receiver)

Cable distance values here are provided merely as a guide, since such values differ depending on the structure of buildings and environmental conditions of the infrared wireless receiver.

16.1. Wiring Design Confirmation

Maximum permissible loss on cable routing must be taken into consideration when calculating wiring between infrared wireless receivers and the tuner. The cable routing loss is caused by distribution loss and cable attenuation, and the sum of both must not exceed 12 dB.

The loss value for each is as follows:

- (1) Loss of the YW-1022 (2-branch distributor): 4.5 dB
- (2) Loss of the YW-1024 (4-branch distributor): 8.5 dB
- (3) Attenuation for 100 m (109.36 yd) of coaxial cable: As shown in the table below.

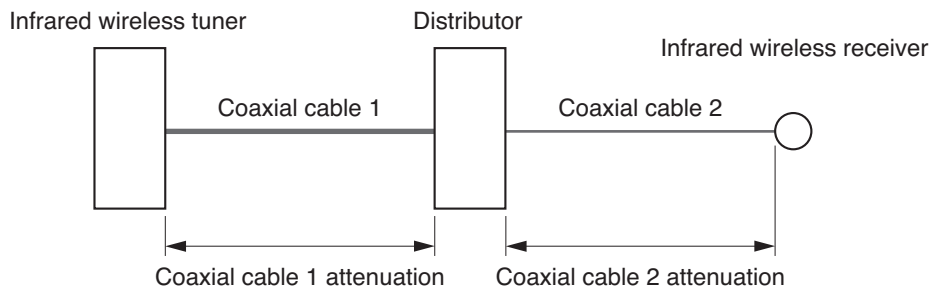
RG-59/U	3.3 dB
RG-6/U	2.7 dB
RG-11/U	2.0 dB

Total attenuation for the connection example illustrated below is as follows:

Cable attenuation = (length/100) x attenuation per 100 m

Total attenuation = Cable 1 attenuation + Cable 2 attenuation + Distributor's attenuation

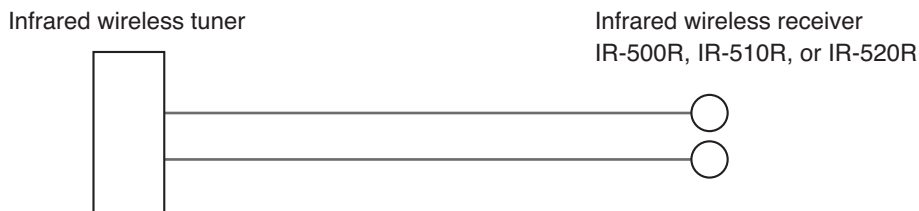
If this total attenuation does not exceed 12 dB, then there should be no problem.



16.2. Design Examples

[Example 1]

When connecting 2 infrared wireless receivers to a single tuner using 2 coaxial cables



Because there is no distributor, only the coaxial cable loss determines the maximum cable distance.

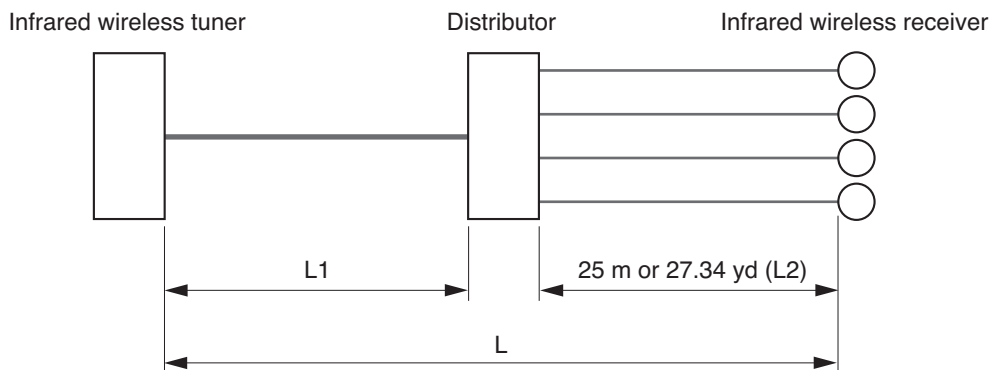
The table at right shows the relationship of coaxial cable type to maximum cable distance.

RG-59/U	606 m (662.73 yd)
RG-6/U	740 m (809.27 yd)
RG-11/U	1000 m (1093.61 yd)

[Example 2]

When connecting 4 infrared wireless receivers to a single tuner using a single coaxial cable

Precondition: Cable distance (L2) from the distributor to the receiver is assumed to be 25 m (27.34 yd).



Assuming that the RG-59/U coaxial cable is used in wiring between the distributor and the receiver, the attenuation of this distance is:

$$\text{Attenuation} = 3.3 \text{ dB} \times (25 \text{ m} / 100 \text{ m}) = 0.825 \text{ dB.}$$

Since loss of 8.5 dB results from the distributor, the maximum permissible loss from the infrared wireless tuner to the distributor stands at 2.675 dB (12 dB – 0.825 dB – 8.5 dB).

If the RG-6/U coaxial cable is used in wiring from the tuner to the distributor, given the wiring distance between the two is L1,

$$\begin{aligned} L1 &= (\text{coaxial cable attenuation/coaxial cable attenuation per 100 m}) \\ &= (2.5 \text{ dB} / 2.7 \text{ dB}) \times 100 \text{ m} \\ &= 92 \text{ m (100.61 yd)} \end{aligned}$$

Maximum cable length (wiring distance from the infrared wireless tuner to the infrared wireless receiver) can be found from the following equation:

$$\begin{aligned} L &= L1 + 25 \text{ m} \\ &= 92 \text{ m} + 25 \text{ m} \\ &= 117 \text{ m (127.95 yd)} \end{aligned}$$

Similarly, the maximum cable length (wiring distance from the tuner to the receiver) calculated relative to the type of coaxial cable used between the tuner and the distributor is as shown in the table below:

RG-59/U	348 m (380.58 yd)
RG-6/U	414 m (452.76 yd)
RG-11/U	542 m (592.74 yd)

17. TROUBLESHOOTING

Symptom	Cause and Points to Check	Remedy
The unit fails to turn on when the power switch is pressed.	Power plug is unplugged from an AC wall outlet.	Plug the power plug into an AC wall outlet.
No signal received	Infrared wireless microphone's power switch not set to ON.	Set the microphone power switch to ON.
	Infrared wireless microphone's battery has become discharged.	Replace the battery with a new one. If a rechargeable battery is used, recharge it.
	The channel set for the infrared wireless microphone differs from the receiving channel.	Make both the infrared microphone and reception channels identical.
No sound outputs	Infrared wireless tuner not connected to an amplifier properly.	Connect correctly. (See p. 9 "Connection Example.")
	CH-A/MIX output selector switch not set correctly.	Set the switch correctly. (See p. 9 "Connection Example.")
Sound is too faint to hear	Infrared wireless tuner's volume control is set to too low a level.	Rotate the tuner's volume control to set it to an appropriate volume level.
	Amplifier volume control is set to too low a level.	Set the amplifier volume control to an appropriate volume level.
Noise or strange (i.e. muddy) sound is heard	Infrared wireless receiver is installed in close proximity to a device generating radio noise or infrared light.	Set the receiver properly, referring to p. 11 "Installation precautions" for the infrared wireless receiver.
Short transmission distance	Infrared wireless receiver cables not properly connected.	Connect the receiver cables properly.

18. SPECIFICATIONS

Power Source	AC mains, 50/60 Hz (supplied from the included AC adapter)
Power Consumption	15 W or less
Receiving Frequency	Channel A: 3.100 MHz Channel B: 3.350 MHz
Receiver Sensitivity	S/N ratio: over 50 dB (40 dB μ V input, 1 kHz modulation, \pm 4.8 kHz deviation)
S/N ratio	61 dB or more (60 dB μ V input, \pm 4.8 kHz deviation, A-weighted)
Tone squelch frequency	32.768 kHz
Infrared Receiver Input	75 Ω , BNC jack x 2 (Infrared wireless receiver's power source: 24 V DC, 220 mA max. in total of 2 terminals)
Output	Channel A and B: -10 dB*1 (\pm 4.8 kHz deviation, at volume level max.), 600 Ω , electronically balanced, 3 pole phone jack Note: Channel A switchable to mixer output
Frequency Response	100 Hz – 12 kHz
Operating Temperature	-10 to +50 °C (+14 to +122 °F)
Operating Humidity	30 to 85% RH
Finish	Case: ABS resin, black
Dimensions	210 (w) x 44 (h) x 210.9 (d) mm (8.27" x 1.73" x 8.3")
Weight	630 g or 1.39 lb (unit itself)

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

AC adapter*2	1
Power cord (2 m or 6.56 ft)*2	1
Cord with a phone plug (1 m or 3.28 ft)	1
Color label (6 colors)	1
Rubber foot	4

• Optional product

Rack mounting bracket: MB-WT3

*1 0 dB = 1 V

*2 Not supplied with the IR-702T KR. For the usable power supply cord and AC adapter, contact your nearest TOA dealer.

Traceability Information for Europe (EMC directive 2004/108/EC)

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