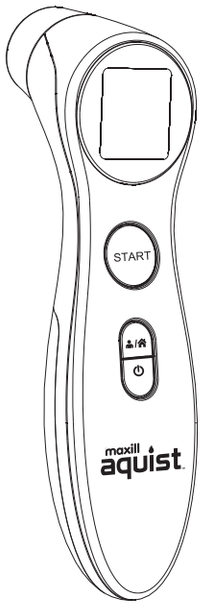
maxill aquist™

**INFRARED FOREHEAD THERMOMETER**

**Item 81415**




# OWNER'S MANUAL

## INTRODUCTION

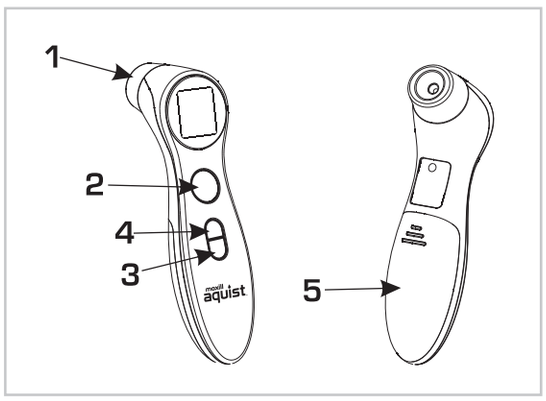
The maxill aquist Infrared Forehead Thermometer is specifically designed for safe use on the forehead. The Infrared Forehead Thermometer is a device capable of measuring people's body temperature by detecting the intensity of infrared light emitted from the forehead. It converts the measured heat into a temperature reading displayed on the LCD. The Infrared Forehead Thermometer is intended for the intermittent measurement of human body temperature from the skin surface of the forehead by people of all ages. When properly used, it will quickly assess your temperature in an accurate manner.

### WARNING

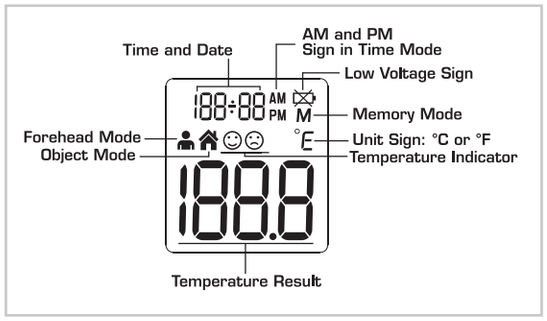
1. There is no gender limitation for using the infrared forehead thermometer. The infrared forehead thermometer is not recommended for use in children under 2 years old.
2. This thermometer is intended for home use only.
3. Use of this forehead thermometer is not intended as a substitute for consultation with your physician.
4. Do not allow children to take their temperatures unsupervised. Some parts are small enough to be swallowed.
5. Never immerse this device in water or other liquids. It is neither water resistant nor waterproof.
6. Do not modify this equipment without authorization of manufacturer.
7. Do not expose the thermometer to temperature extremes (below -25°C/-13°F or over 55°C/131°F) nor excessive humidity (>95%RH).
8. Keep the batteries away from children.
9. Remove the batteries from the device when not in operation for a long time.

## PRODUCT DESCRIPTION

1. Probe
2. START Button
3. ⏻ Button
4. 👤/🏠 Button
5. Battery Cover




## LCD DISPLAY




## BASIC FUNCTIONS

| | |
|---|---|
| **Real Time Clock** | The real time clock will be recorded with the memory function and help you to recognize each measurement result.<br>Please see the real time clock setting section to learn how to setup the time in the first use. |
| **Forehead Mode** | The thermometer has been designed for practical use. It's not meant to replace a visit to the doctor. Please also remember to compare the measurement result to your regular body temperature.<br>Please see the Illustration For Use section to learn how to measure the body temperature. |
| **Object Mode** | The object mode shows the actual, unadjusted surface temperatures, which is different from the body temperature. It can help you monitor if the object temperature is suitable for the baby or patient. E.g. infant formula.<br>Please see the Illustration For Use section to learn how to measure the object temperature. |
| **Beep Alarm** | If the thermometer detects a body temperature ≥ 37.8°C (100°F) under forehead mode, there will be a long beep sound followed by three short beep sound to warn the user. |
| **Memory Mode** | There are up to 10 readings that can be saved to memory for the forehead and object measurements. |
| **°C/°F Switch** | Please see the Selecting A Temperature Scale section to learn how to change between Celsius and Fahrenheit. |

## FOREHEAD THERMOMETER ADVANTAGES

Infrared Forehead Thermometer measures core body temperature, which is the temperature of a body's vital organs. (See Figure 1) This thermometer is designed to measure the temperature of the skin surface over the temporal artery, a major artery of the head. The temporal artery is connected to the heart via the carotid artery, directly leading from the aorta, the main trunk of the arterial system. It offers constant blood flow. Therefore, body temperature changes are reflected sooner in the forehead than they are in other parts of the body such as oral, rectal and underarm.

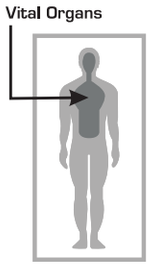



Figure 1

## REAL TIME CLOCK SETTING

When using thermometer for the first time, please set the parameters of the thermometer. With the thermometer off, press and hold ⏻ BUTTON to enter into setting mode for 3 seconds.

**① Set the time format**

The device can display the time in either an AM/PM (12-hour) or a 24:00 (24-hour) format. Press and release START BUTTON to select the format. With the preferred time format on the display, press ⏻ BUTTON, the Hour figure flashes automatically.




**② Set the hour**

Press and release the START BUTTON to advance one hour until the correct hour appears. After the hour is set, press ⏻ BUTTON, the Minute figure flashes automatically.




**③ Set the minute**

Press and release the START BUTTON to advance one minute until the correct minute appears. After the minute is set, press ⏻ BUTTON, the Year figure flashes automatically.




**④ Set the year**

Press and release the START BUTTON to advance one year until the correct year appears. After the year is set, press ⏻ BUTTON, the Month figure flashes automatically.



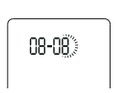

**⑤ Set the month**

Press and release the START BUTTON to advance one month until the correct month appears. After the month is set, press ⏻ BUTTON, the Date figure flashes automatically.




**⑥ Set the date**

Press and release the START BUTTON to advance one day until the correct month appears. After the day is set, press ⏻ BUTTON to exit the setting mode.




## TEMPERATURE TAKING HINTS

To ensure that the reading always reflects the body temperature accurately, you need to take account of the following factors which may affect an accurate reading.

1. It is important to know each individual's normal temperature when they are well. This is the only way to accurately diagnose a fever. To determine normal temperature, take multiple readings when healthy. Re-measure with a standard digital thermometer for confirmation.
2. Users must be inside for 30 minutes before taking a measurement. Note: Users and the thermometer should be in the same ambient temperature for at least 10 minutes before taking a reading.
3. Users should not drink, eat, or be physically active such as bathing, showering, shampooing and hair drying before/while taking the measurement. Remove hat and move away hair and wait 10 minutes before taking a reading.
4. Oils or cosmetics on the forehead may give a lower temperature reading than the actual one. Remove dirt from the forehead before taking a measurement. Wait at least 10 minutes after washing the forehead area before taking a reading.
5. Holding a hand on the forehead for any length of time will affect the temperature reading.
6. Do not take temperature over scar tissue, open sores or abrasions.
7. Do not use the thermometer on a perspiring or sweating forehead, as this may affect the reading.
8. Don't take a measurement while or immediately after nursing a baby.
9. Do not use this thermometer outdoors.
10. Do not take temperatures with this thermometer near places that are very hot, such as fireplaces and stoves.
11. The probe window of the thermometer is the most delicate part of the device. Do not touch the probe window. The accuracy of the reading may be affected if the probe window is damaged or dirty.
12. If the thermometer is stored in a significantly different environment than testing location, place it in the testing location for approximately 30 minutes prior to use.
13. It is not intended for use in the oxygen rich environment and presence of flammable anaesthetic mixture with air, oxygen or nitrous oxide.

## ILLUSTRATION FOR USE

### To measure forehead temperature:

1. Press the ⏻ BUTTON. The display is activated to show all segments. After self-checking, Figure 2 appears on the display screen with beeps, so you can start a new measurement.
2. Aim the thermometer at the center of the forehead from a distance of 2 to 3 cm. (see Figure 3) Then press the START BUTTON. Note: Do not remove the thermometer from the forehead before hearing the final beep. A waiting period of 3 seconds between testing is recommended to ensure complete accuracy.
3. Read the temperature on the display.
4. Press the ⏻ BUTTON to turn off.




Figure 2



Figure 3

### To change between Forehead mode and Object mode:

You can press 👤/🏠 BUTTON to switch the mode between Forehead mode and Object mode.

### To measure object temperature:

1. Press the ⏻ BUTTON to turn on the thermometer. You can take the object temperature after hearing two beep sounds. (see Figure 4)
2. Aim the thermometer at the centre of the object you want to measure with a distance of 1 to 2 cm.
3. Press the START BUTTON and then read the temperature on the display
4. Press the ⏻ BUTTON to turn off.




Figure 4

### After measurement:

1. Power off: Device will automatically shut off if left idle for more than 1 minute to extend battery life.
2. Clean the probe after each use to ensure an accurate reading and avoid cross contamination. (See the section of Care and Cleaning for details.)

### Temperature indicator:

In Forehead mode:
1. If the temperature reading is below 37.8°C( 100.0°F) , a happy face ☺ will be displayed next to the reading.
2. If the temperature reading is 37.8°C( 100.0°F) or above, a sad face ☹ will be displayed next to the reading.

## MEMORY MODE

1. The Memory Mode can be accessed ether in forehead mode or object mode: When the thermometer has been turned on and followed by Figure 2/4 or finished testing, press and hold the ⏻ BUTTON for three seconds. The letter M will appear in the center right corner of the display. (see Figure 5)
2. The thermometer will automatically memorize the last 10 temperature readings. Each memory also records the measurement date/time/mode icon. Each time the ⏻ BUTTON is pressed, the screen displays past readings that correspond with a number 1-10. The number 1 reflects the most recent reading, while the number 10 reveals the oldest reading stored in memory. (see Figure 6)
3. In the memory mode, 👤 mark or 🏠 mark always exist. The user can press the START BUTTON to take new measurements.

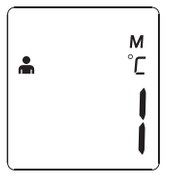



Figure 5




Figure 6

## SELECTING A TEMPERATURE SCALE

1. Temperature readings are available in the Celsius (°C) or Fahrenheit (°F) scale.
2. With the thermometer off, press and hold the START BUTTON for 3 seconds to enter into unit changing mode.
3. Press and release START BUTTON to select the unit.
4. When the preferred unit on the display, press ⏻ BUTTON to exit the unit changing mode.

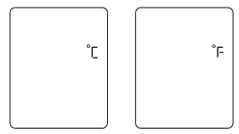



Figure 7

## CARE AND CLEANING

1. The probe window must be kept clean, dry, and undamaged at all times to ensure accurate readings. The accuracy of temperature readings can be affected by damage to the probe window, or the presence of dirt, fingerprints, earwax, dust and other soiling compounds on the probe window. Degraded sensors can degrade performance or cause other problems.
2. The probe window is the most delicate part of the thermometer. Use a soft cloth slightly moistened with a 75% isopropyl alcohol solution to disinfect probe window and the thermometer. Do not use abrasive cleaners. After cleaning, allow at least 10 minutes drying time before taking temperatures. Note: Do not use any chemical other than isopropyl alcohol to clean the probe window.
3. Use a soft, dry cloth to clean the thermometer display and exterior.
4. The thermometer is neither water resistant nor waterproof. Do not submerge the unit in water when cleaning.
5. Store the thermometer in a dry location, free from dust and contamination and away from direct sunlight.
6. Strong electromagnetic fields may interfere with the proper operation of the thermometer. The device needs special pre-cautions regarding EMC according to the EMC information.
7. Store the thermometer in its original packaging when not in use.

## BATTERY REPLACEMENT

1. Replace battery when ⊠ appears in the upper right corner of LCD display. (see Figure 8)
2. Slide battery cover down as shown in Figure 9.
3. Remove battery and install 2 new AAA alkaline batteries as shown in Figure 10.
4. Slide battery cover back on.

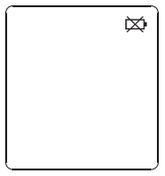


Figure 8

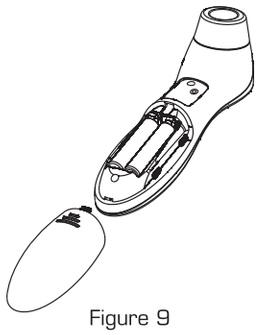


Figure 9

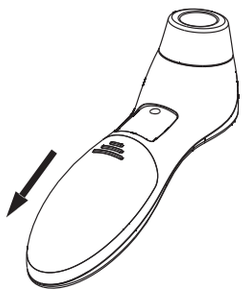


Figure 10

## SPECIFICATIONS

| | |
|---|---|
| **Measuring Range** | Forehead mode: 34.0°C~43.0°C (93.2°F~109.4°F)<br>Object mode: 0°C~100°C (32°F~212°F) |
| **Measuring Site** | Forehead (Forehead Mode) |
| **Reference Body Site** | Oral (This thermometer converts the forehead temperature to display its "oral equivalent.") |
| **Operation mode** | Forehead mode (Adjust mode) |
| **Laboratory accuracy** | Forehead mode:<br>± 0.2°C (0.4°F) during 35.5°C~42.0°C (95.9°F~107.6°F) at 15°C~35°C (59.0°F~95.0°F) operating temperature range<br>± 0.3°C (0.5°F) for other measuring and operating temperature range<br>Object mode: ± 4% or ± 2°C(4°F) whichever is greater |
| **Display resolution** | 0.1°C or 0.1°F |
| **Measure time** | Approximately 1 second |
| **Operating temperature range** | 10°C~40°C(50°F~104°F), 15%~85%RH, non-condensing<br>Atmospheric Pressure : 700hPa ~ 1060hPa |
| **Storage and transport temperature range** | -25°C~55°C (-13°F~131°F), 15%~95%RH, non-condensing<br>Atmospheric Pressure : 700hPa ~ 1060hPa |
| **Clinical accuracy** | Clinical bias: -0.09°C ( -0.16°F)<br>Clinical repeatability: 0.13°C ( 0.23°F)<br>Limits of agreement: 0.87°C ( 1.57°F) |
| **Shock** | withstands drop of 3 feet |
| **Dimension** | 153 x 41 x 44 mm |
| **Weight** | Approx. 84grams (with batteries) |
| **Battery** | DC3V (2 x AAA battery) |
| **Battery Life** | Approx. 1 year/6000 readings |
| **Expected service life** | Three years |
| **Ingress protecting rating** | IP22 |

## TROUBLESHOOTING

| Error Message | Problem | Solution |
|---|---|---|
| Er 1 | Measurement before thermometer is ready. | Take a measurement until 🧍 or 🏠 appears on the display. |
| Er2 | The ambient temperature is not within the range between 10°C and 40°C (50°F~104°F). | Place the thermometer in a room for at least 30 minutes at room temperature between 10°C and 40°C (50°F~104°F). |
| Er3 | The thermometer is placed incorrectly or unsteady. | Read Illustration For Use thoroughly and take a new temperature measurement. |
| Er4 | The thermometer is showing a rapid ambient temperature change. | Allow the thermometer to rest in a room for at least 30 minutes at room temperature between 10°C and 40°C (50°F~104°F) |
| Er5 | The thermometer is not functioning properly. | Unload the batteries, wait for 1 minute and repower it. If the message reappears, contact the retailer for service. |
| Hi | In Forehead mode: Temperature taken is higher than 43.0 °C(109.4°F).<br>In Object mode: Temperature taken is higher than 100 °C (212°F). | Read Temperature Taking Hints thoroughly. Then take a new temperature measurement. |
| Lo | In Forehead mode: Temperature taken is lower than 34.0 °C (93.2°F)<br>In Object mode: Temperature taken is lower than 0°C (32°F). | Read Temperature Taking Hints thoroughly. Then make sure the lens filter is clean. Then take a new temperature measurement. |
| ⊠ | The thermometer may not function due to low battery power. | Replace two new alkaline batteries size AAA. |

## CALIBRATION

The thermometer is initially calibrated at the time of manufacture. If the thermometer is used according to theses directions, periodic readjustment is not required. Nevertheless, we recommend calibrating this device every two years or whenever clinical accuracy of the thermometer is in question.

The above recommendations do not supersede legal requirements. The user must always comply with legal requirements for the control of the measurement, functionality, and accuracy of the device which are required by the scope of relevant laws, directives or ordinances where the device is used.

Procedures for checking the calibration are available upon request.

Type BF applied part

Direct Current

Disposal of this product and used batteries should be carried out in accordance with regulations for the disposal of electronic products

LOT Batch Code

-25℃ 55℃ Storage and Transportation Temperature Limit: -25°C~55°C (-13°F~131°F)

## SERVICE

The thermometer has a limited one year warranty. Do not attempt to disassemble or repair the thermometer by yourself. If the thermometer does not function properly after troubleshooting, contact maxill at 1-800-268-8633 for assistance or to arrange the return of the device to maxill. The device must be securely packaged (preferably in its original packaging) to avoid damage during shipping.

## WARRANTY

This appliance conforms to the following standards: ISO 80601-2-56 Medical electrical equipment -Part 2-56: Particular requirements for basic safety and essential performance of clinical thermometers for body temperature measurement, IEC 60601-1-11 Medical electrical equipment -Part 1-11: General requirements for basic safety and essential performance -Collateral Standard: Requirements for medical electrical equipment and medical electrical systems used in the home healthcare environment and complies with the requirements of IEC 60601-1-2(EMC) , IEC 60601-1(Safety) standards. The OEM is ISO 13485 certified.

Thermometer is warranted by the manufacturer to be free from defects in material and workmanship under normal use and service for a period of one year from the date of delivery to the first user who purchases the instrument. This warranty does not cover battery leakage, damage to the probe window, or damage to the instrument caused by misuse, negligence or accident, and extends to only to the first purchaser of the product.

## ELECTROMAGNETIC COMPATIBILITY INFORMATION

The device satisfies the EMC requirements of the international standard IEC 60601-1-2. The requirements are satisfied under the conditions described in the table below. The device is an electrical medical product and is subject to special precautionary measures with regard to EMC which must be published in the instructions for use. Portable and mobile HF communications equipment can affect the device. Use of the unit in conjunction with non-approved accessories can affect the device negatively and alter the electromagnetic compatibility. The device should not be used directly adjacent to or between other electrical equipment.

Table 1

| Guidance and declaration of manufacturer-electromagnetic emissions | | |
|---|---|---|
| The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should ensure that it is used in such an environment. | | |
| Emissions test | Compliance | Electromagnetic environment - guidance |
| RF emissions CISPR 11 | Group 1 | The device uses RF energy only for its internal function. Therefore, its emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| RF emissions CISPR 11 | Class B | The device is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions IEC 61000-3-2 | N/A | |
| Voltage fluctuations/ flicker emissions IEC 61000-3-3 | N/A | |

**Warning:**

1. The use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.
2. Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the [ME EQUIPMENT or ME SYSTEM], including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Table 2

| Guidance and declaration of manufacturer - electromagnetic emissions | | | |
|---|---|---|---|
| The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should ensure that it is used in such an environment. | | | |
| IMMUNITY test | IEC 60601 test level | Compliance level | Electromagnetic environment guidance |
| Electrostatic discharge (ESD) IEC 61000-4-2 | ± 8 kV contact<br>± 2 kV, ± 4 kV<br>± 8 kV, ± 15 kV air | ± 8 kV contact<br>± 2 kV, ± 4 kV<br>± 8 kV, ± 15 kV air | Floors should be wood, concrete or ceramic tile. If floors are covered wih synthetic material, the relative humidity should be at least 30%. |
| Electrostatic transient/burst IEC 61000-4-4 | ± 2 k V for power supply lines<br>± 1 kV for input/ output lines | N/A | |
| Surge IEC 61000-4-5 | ± 1 kV differential mode<br>± 2 kV common mode | N/A | |
| Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11 | < 5% UT (>95% dip in UT) for 0.5 cycle<br>40% UT (60% dip in UT) for 5 cycle<br>70% UT (30% dip UT) for 25 cycle<br><5% UT (>95% dip in UT) for 5 sec | N/A | |
| Power frequency (50/60 Hz) magnetic field IEC 61000-4-8 | 30 A/m; 50 Hz or 60 Hz | 30 A/m;<br>50 Hz or 60 Hz | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. |

Table 3

| Guidance and declaration of manufacturer - electromagnetic immunity | | | |
|---|---|---|---|
| The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should ensure that it is used in such an environment. | | | |
| IMMUNITY test | IEC 60601 test level | Compliance level | Electromagnetic environment - guidance |
| Conducted RF IEC 61000-4-6 | 3 V<br>0.15MHz to 80 MHz<br>6V in ISM and amateur radio bands between 0.15MHz and 80 MHZ 80% AM at 1kHz | N/A | Portable and mobile RF communications equipment should be used no closer to any part of the device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.<br>Recommended seperation distance<br>$d = [\frac{3.5}{E_1}]\sqrt{P}$ 80 MHz to 800 MHz<br>$d = [\frac{7}{E_1}]\sqrt{P}$ 800 MHz to 2.7 GHz |
| Radiated RF IEC 61000-4-3 | 10 V/m 80 MHz to 2.7 GHz | 10 V/m | |
| RF Wireless Communication Equipment IEC 61000-4-3 | 380MHz, 27V /m<br>450MHz, 28V /m<br>710MHz,745 MHZ,780MHz 9V/m<br>810MHz,870 MHZ,930MHz 28V/m<br>1720MHz,1845 MHZ,1970MHz 28V/m<br>2450MHz, 28V /m<br>5240MHz,5500 MHZ,5785MHz 9V/m | 380MHz, 27V /m<br>450MHz, 28V /m<br>710MHz,745 MHZ,780MHz 9V/m<br>810MHz,870 MHZ,930MHz 28V/m<br>1720MHz,1845 MHZ,1970MHz 28V/m<br>2450MHz, 28V /m<br>5240MHz,5500 MHZ,5785MHz 9V/m | Where P is the maximum output of power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).<br>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, a should be less than the compliance level in each frequency range.<br>Interference may occur in the vicinity of equipment marked with the following symbol: |

Table 4

| Recommended separation distances between portable and mobile RF communications equipment and the device | | |
|---|---|---|
| The device is intended for use in an electromagnetic environment in which radiation is controlled therefore disturbances are controlled. The customer or the user of the device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the device as recommended below, according to the maximum output power of the communications equipment. | | |
| Rated maximum output power of transmitter W | Separation distance according to frequency of transmitter m | |
| | 80 MHz to 800 MHz $d = [\frac{3.5}{E_1}]\sqrt{P}$ | 800 MHz to 2.7 GHz $d = [\frac{7}{E_1}]\sqrt{P}$ |
| 0.01 | 0.12 | 0.23 |
| 0.1 | 0.38 | 0.73 |
| 1 | 1.2 | 2.3 |
| 10 | 3.8 | 7.3 |
| 100 | 12 | 23 |

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE1 At 80 MHz and 800 MHz, the separation distance for the higer frequency range applies.

NOTE2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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