equinox

Digital Blood Pressure Monitor

EQ-BP-101

User Manual

- Thanks for selecting our Digital Blood Pressure Monitor EQ-BP-101
- Please do read the user manual carefully and thoroughly. Keep it safe for future reference.

General Description

Thank you for selecting EQUINOX's Blood Pressure Monitor EQ-BP-101. It is a very handy and useful device to monitor blood pressure at home. This device provides easy solutions for many people looking to keep a track of their health without leaving the comfort of their home. This monitor is lightweight, weighing approximately 250 grams. The digital LCD display is large and easy to read. The monitor displays systolic, diastolic and pulse readings. The arm cuff is made of soft material and can be comfortably wrapped around your upper arm.

Features

1. Large LCD Display
2. Detects Irregular Heartbeat
3. B.P classification Indicator is displayed on the monitor
4. Large Sized Cuff
5. Package includes monitor, 4 AAA batteries, cuff and storage kit
6. Comes with DPDA Technology for Accuracy
7. Comfort Inflation Technology
8. 60 measurements memory saving function
9. Two options of operating the device - Battery or Adapter
10. Hand Movement Detection
11. Device will depict misleading results if instructions are not followed.
12. Refer to the user manual or watch our video carefully for instructions on how to use the device (www.youtube.com/watch?v=ZzLIxi1qi0A)

Safety Information

The below signs might be in the user manual, labeling or other component. They are the requirement of standard and using.

	Symbol for "THE OPERATION GUIDE MUST BE READ"		Symbol for "TYPE BF APPLIED PARTS"
SN	Symbol for "SERIAL NUMBER"		Symbol for "ENVIRONMENT PROTECTION - Wast electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice"
⎓	Symbol for "DIRECT CURRENT"		
	Symbol for "MANUFACTURE DATE"		
⚠	Caution: These notes must be observed to prevent any damage to the device	CE 0123	Symbol for "COMPLIES WITH MDD 93/42/EEC REQUIREMENTS"

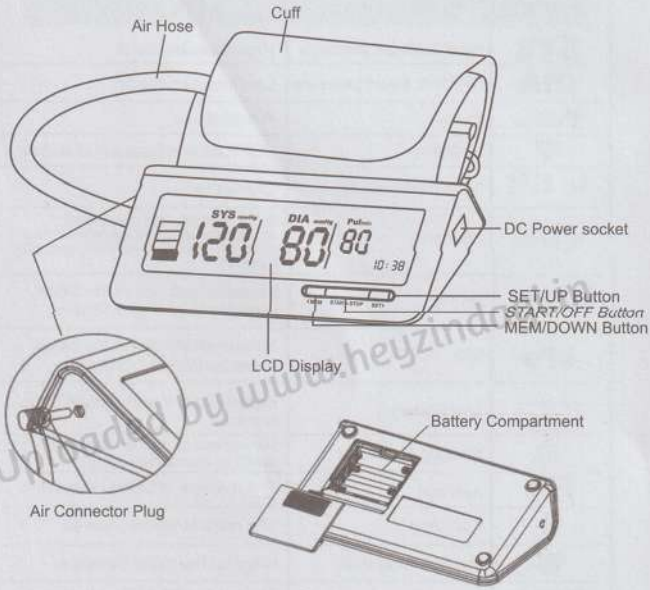
⚠ CAUTION

This device is intended for adult use only.
This device is intended for non-invaslve measuring and monitoring of arterial blood pressure. It is not intended for use on extremities other than the arm or for functions other than obtaining a blood pressure measurement. Do not confuse self-monitoring with self-diagnosis. This unit allows you to monitor your blood pressure.
Do not begin or end medical treatment based solely physician for treatment advice.
If you are taking medication, consult your physician to determine the most appropriate time to measure your blood pressure. Never change a prescribed medication without consulting your physician. This unit is not suitable for continuous monitoring during medical emergencies or operations. If the cuff pressure exceeds 40 kPa (300 mmHg), the unit will automatically deflate. Should the cuff not deflate when pressures exceeds 40 kPa (300 mmHg), detach the cuff from the arm and press the START/STOP button to stop inflation. To avoid measurement errors, carefully read this manual before using the product. The equipment is not AP/APG/ equipment and not suitable for use in the presence of a flammable anesthetic mixture with air of with oxygen of nitrous oxide.
The operator shall not touch output of AC adapter and the patient simultaneously.
To avoid measurement errors, please avoid the condition of strong electromagnetic field radiated interference signal or electrical fast transient/burst signal when using the AC adapter. The use must check that the equipment functions safely and see that it is in proper working condition before being used. EQUINOX does not require such preventive inspection by other person.

■ LCD Display Signal

SYMBOL	DESCRIPTION	EXPLANATION
SYS	Systolic blood pressure	High pressure result
DIA	Diastolic blood pressure	Low pressure result
Pul/min	Pulse	Pulse/minute
▼	Deflating	CUFF air is exhausting of deflating
AM 8:59	Time (hour:minute)	Current time
M 18/60	Memory	If "M" shows, the displayed measurement values is from the memory. For instructions, refer to Page11
mmHg	mmHg	Measurement Unit of the blood pressure (1mmHg=0.133kPa)
kPa	kPa	Measurement Unit of the blood pressure (1kPa=7.5mmHg)
Lo	Low Battery	Batteries are low and need to be replaced
	Shaking Reminder	Movement of arm is detected, which leads to inaccurate results
AVG	Average	The average of blood pressure
	Recalling	The records will be showed
	Irregular heartbeat	Irregular heartbeat detection
Normal	Grade	The grade of the blood pressure. For instructions, refer to Page 15

■ Monitor Components



■ Package Includes

1. Digital Blood Pressure Monitor (EQ-BP-101)

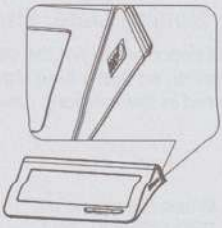
2. Cuff

Component list of pressure measuring system
1. Cuff
2. PCBA
3. Air Pipe
4. Pump
5. Valve

3. 4*AAA Batteries

4. User Manual

■ Power Supply



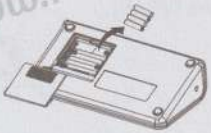
Battery powered mode:
VDC 4*AAA batteries
OR
Adapter powered mode:
6V ⎓ 1A
(Can be supplied by AC adapter model *UE08WCP-060100SPA* only!)
(Not Included)

⚠ CAUTION

In order to get accurate results and ensure that the monitor works efficiently, we recommend using good quality batteries and special power adaptor.

■ The installment and replacement of batteries

1. Slide off the battery cover.
2. Install the batteries by matching the correct polarity, as shown.
3. Replace the cover.



Replace the batteries whenever the below happen

- The lo shows
- The display dims
- The display does not light up

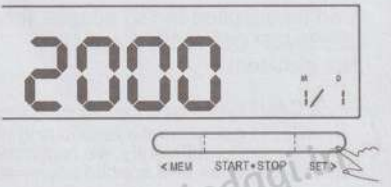
⚠ CAUTION

- Remove batteries if the device is not likely to be used for some time.
- The old batteries are harmful to the environment, do not dispose with other daily trash.
- Remove the old battery from the device and follow your local recycling guidelines.
- Do not dispose of batteries in fire. Batteries may explode or leak.
- Do not use new and used batteries together.
- Do not use different types of batteries together.

■ Setting Date, time and measurement unit

It is important to set the clock before using your blood pressure monitor, so that a time stamp can be assigned to each record that is stored in the memory. (year :2000-2050,time:24 H)

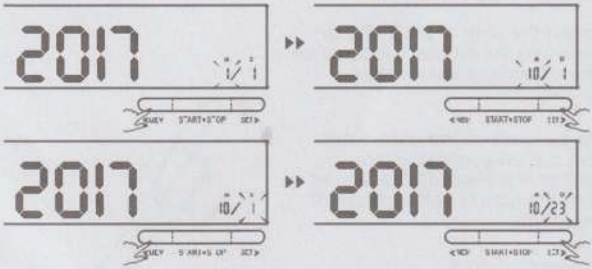
1. When the unit is off, hold pressing "SET" for 3 seconds to enter the mode for year setting.



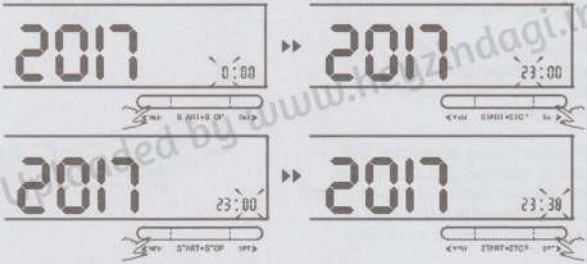
2. Press the "MEM" to change the [YEAR].

3. When you get the right year, press "SET" to set down and turn to next step automatically.

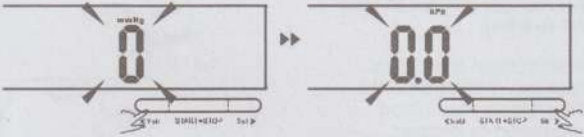
4. Repeat the 2 and 3 to set the [MONTH] and [DAY].



5. Repeat the 2 and 3 to set the [HOUR] and [MINUTE].



6. Repeat the 2 and 3 to set the [UNIT].

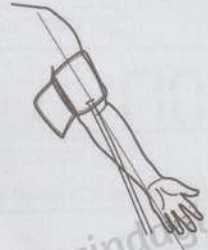


7. After the unit is set, the right picture will show, then it turn off automatically.

■ Apply the Cuff

1. Insert the plug of the cuff's air pipe into the interface located on the left side of the monitor (facing you).

2. As pictured on the right, wear the cuff on your upper arm (left arm preferred). Make sure that the tube is at the center of your arm.

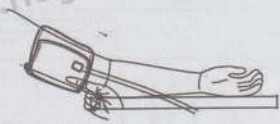


3. Correct Posture:

A. Remove accessories before inserting the cuff.

B. Please sit comfortably with legs uncrossed, feet flat on the floor, back and arm supported.

C. Please make sure that the cuff is around 2-3 cm above the elbow. Appropriate to insert one finger when the cuff is tightened around your arm.



D. Please do not speak while the monitor inflates to take the reading.

E. Wait at least 3 minutes between measurements. This allows your blood circulation to recover.

F. For a meaningful comparison, try to measure under similar conditions. For example, take daily measurements at approximately the same time, on the same arm, or as directed by a physician.

■ Measurement Principle

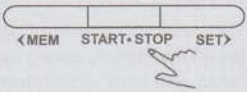
This product uses the Oscillometric Measuring method to detect blood pressure. Before every measurement, the unit establishes a "zero pressure" equivalent to the air pressure. Than it starts inflating the arm cuff, meanwhile, the unit detects pressure oscillations diastolic pressure, and also pulse rate.
The device also compares the longest and the shortest time intervals of detection. The device will display a warning signal with the reading to indicate the detection of irregular heartbeat when the difference of the time intervals is over 25%

■ Indications for Use

The Digital Blood Pressure Monitor is digital monitors intended for use in measuring blood pressure and heartbeat rate with arm circumference ranging from 22cm to 34cm. It is intended for adult indoor use only.

■ Start the Measurement

1. Press the "START/STOP" to turn on the monitor, and it will finish the whole measurement automatically.



LCD Display

Adjust the zero automatically.

Inflating and measuring

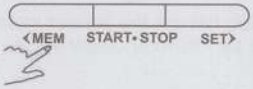
Automatically.

Display and save the results automatically

2. Press the "START/STOP" to power off, otherwise it will turn off automatically within 1 minute.

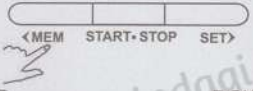
■ Recalling the Records

1. When the monitor is off, please press the "MEM" to show the average of the record.



The sign of "AVG" will show in the right corner.

2. Press the "MEM" or "SET" to get the record you want.



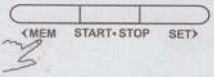
The order of the record, date, time will display alternately.

⚠ CAUTION

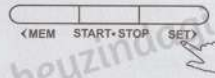
The most recent record (1) is shown first. Each new measurement is assigned to the first (1) record. All other records are pushed back one digit (e.g., 2 becomes 3, and so on), and the last record (60) is dropped from the list.

■ Deleting a measurement record from memory

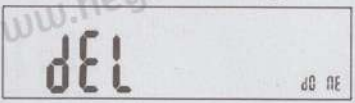
If you did not get the correct measurement, you can delete all results by following below steps.



1. When the monitor is off, hold pressing "MEM" for 3 seconds ,the flash display will show.

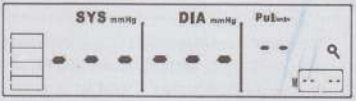


2. Press "SET" to confirm deleting and the monitor will turn off automatically



3. If you don't want to delete the records, press "START/STOP" to escape.

4. If there is no record, the right display will show.



■ Tips for Measurement

It can cause incorrectness if the measurement are taken in the following circumstances.

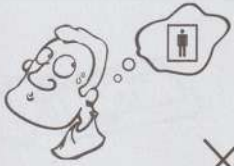
Within 1 hour after meals or drinking alcohol

Immediate measurement after having tea, coffee or smoking

Within 20 minutes after taking a bath

When talking or moving your fingers

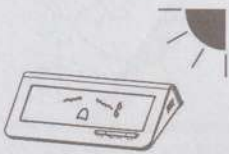
In a very cold environment



When you want to discharge urine

■ Maintenance

To obtain the best performance, please follow instructions below:

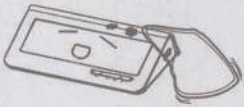


Put in a dry place and avoid the sunshine

Avoid immersing it in water, clean it with a dry cloth in case it happens

Avoid the intense shaking and collisions

Avoid dusty environment and unstable - temperature surroundings

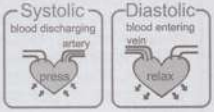


Use the slightly damp clothing to remove the dirt

Avoid washing the cuff

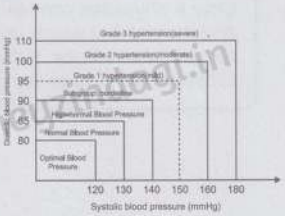
■ What are systolic pressure and diastolic pressure?

When ventricles contract and pump blood out of the heart, blood pressure reaches its maximum value, blood pressure reaches its cycle is known as systolic pressure. When the heart relaxes between heartbeats, the lowest blood pressure is diastolic pressure.



■ What is the standard blood pressure classification?

Below illustrates the blood pressure classification mode by World Health Organization (WHO) and International Society of Hypertension(ISH) in 1999.



Level / Blood Pressure (mm Hg)	Optimal	Normal	High-normal	Mild	Moderate	Severe
SYS	<120	120-129	130-139	140-159	160-179	≥180
DIA	<80	80-84	85-89	90-99	100-109	≥110

■ Irregular Heartbeat Detector

This Blood Pressure Monitor is equipped with an intelligent function of irregular Heartbeat (IHB) Detector. During each measurement, this equipment records the heartbeat intervals and works out the standard deviation. If the calculated value is lager than or equal to 25%, This equipment will light up the IHB symbol on the screen when displaying the measuring result.

⚠ CAUTION

The appearance of the IHB icon indicates that a pulse irregularity consistent with an irregular heart-beat was detected during measurement. Usually this is NOT a cause for concern. However, if the symbol appears often, we recommend you seek medical advice. Please note that the device does not replace a cardiac examination, but serves to detect pulse irregularities at an early stage.

⚠ CAUTION

Only a physician can tell you your normal blood pressure range and the point at which you are at risk. Consult your physician to obtain these values. If the measurement taken with these products fall outside the range, please visit a physician.

■ Why my blood pressure is varies even in one day?

1. Individual blood pressure varies throughout the day, it also affected by the way you tie your cuff and your measurement position, so please take the measurement at the same time everyday.
2. The result will vary if the person is under medication.
3. Wait at least 4-5 minutes before taking another measurement.

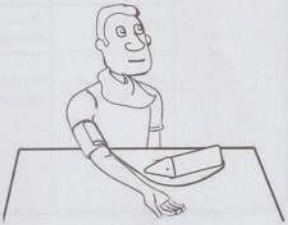
■ Why the blood pressure I get from the hospital is different from home?

The blood pressure is different everyday because of the weather, emotion, exercise etc, specially the "white coat" in hospital which makes the results higher than the ones at home.

Please pay attention to following while taking blood pressure at home:
If the cuff is tied properly.
If the cuff is too tight or too loose.
If the cuff is tied on the upper arm.
If you feel anxious pressured.
You had better take deep breath 2-3 times before beginning.
Advice: adjust yourself for 4-5 minutes until you calm down.

■ Is the result going to be same if measuring on the right arm?

It is ok for both arms, but there will be some different results for different person, so suggest you measure the same arm every time.



TROUBLESHOOTING

This section includes a list of error messages and frequently asked questions for problems you may encounter with your blood pressure monitor. If the product is not operating as you think it should, check here before arranging for servicing.

PROBLEM	SYMPTOM	CHECK THIS	REMEDY
No power	Display will not light up.	Batteries are exhausted.	Replace with new batteries
		Batteries are inserted incorrectly.	Insert the batteries correctly
		AC adapter is inserted incorrectly.	Insert the AC adaptor tightly
Low batteries	Display is dim or show LO	Batteries are low.	Replace with new batteries
Error message	E 1 shows	The cuff is not secure.	Refasten the cuff and then measure again.
	E 2 shows	The cuff is very tight	Refasten the cuff and then measure again
	E 3 shows	The pressure of the cuff is excess.	Relax for a moment and then measure again.
	E10 or E11 shows	The monitor detected motion, talking or the pulse is too poor while measuring.	Relax for a moment and then measure again
	E20 or	The measurement process does not detect the pulse signal.	Loosen the clothing on the arm and then measure again
	E21 shows	The treatment of the measurement failed.	Relax for a moment and then measure again.
	Eexx, show on the display.	A calibration error occurred.	Retake the measurement. If the problem persists, contact the retailer of our customer service department for further assistance. Refer to the warranty for contact information and return instructions.

Power supply	Battery powered mode: VDC 4*AAA batteries OR Adapter powered mode: 6V ⎓ 1A (Can be supplied by AC adapter model UE08WCP-060100SPA only!) (Not Included)
Display mode	Digital LCD V.A.140mm*36mm
Measurements mode	Oscillographic testing mode
Measurements range	Rated cuff pressure: 0kPa - 40kPa (0mmHg~300mmHg) Measurement pressure: 5.3kPa-30.7kPa (40mmHg-230mmHg) Pulse value: (40-199) beat/minute
Accuracy	Pressure: 5℃-40℃within±0.4kPa(3mmHg) pulse value:±5%
Normal Working condition	Temperature:5℃ to 40℃ Relative humidity ≤85% Atmospheric pressure: 86kPa to 106kPa
Storage & transportation condition	Temperature:-20℃-60℃ Relative Humidity 10%-93% Atmospheric Pressure: 50-106 kPa
Measurements perimeter of the upper arm	About 22 cm-34 cm
Net Weight	250 gm
External dimensions	180mm*100mm*40mm
Mode of operation	Continuous operation
Degree of protection	Type BF applied part
Protection against ingress of water	Ip21
Warranty	18 Months (warranty card in the box)
Device Classification	Battery Powered Mode: Internally Powered Medical Equipment AC Adaptor Powered Mode: Class II Medical Equipment

■ Adapter

Please use the EQUINOX authorized adapter. (Not Included in the package)

Adapter
Type: UE08WCP-060100SPA
Input: 100-240V~ 50-60Hz, 400mA
Output: 6V ⎓ 1A

Complied European Standards List

Risk management	EN ISO 14971:2012 Medical devices - Application of risk management to medical devices
Labeling	EN 980:2008 Symbols for use in the labeling of medical devices
User manual	EN 1041:2008 Information supplied by the manufacturer of medical devices
General Requirements for Safety	EN 60601-1:2008 Medical electrical equipment - Part 1: General requirements for basic safety and essential performance EN 60601-1-11:2010 Medical electrical equipment - Part performance - Collateral standard: Requirements for medical electrical equipment and medical electrical systems used in the home healthcare environment
Electromagnetic compatibility	EN 60601-1-2:2007 Medical electrical equipment - Part 1-2 General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests
Performance requirements	EN ISO 81060-1:2012 Non-invasive sphygmomanometers - Part 1: Requirements and test methods for non-automated measurement type EN 1060-3:1997+A2:2009 Non-invasive sphygmomanometers - Part 3: Supplementary requirements for electro-mechanical blood pressure measuring systems
Clinical investigation	EN 1060-4:2004 Non-invasive sphygmomanometers - Part 4: Test procedures to determine the overall system accuracy of automated non-invasive sphygmomanometers
Usability	EN 60601-1-6:2010 Medical electrical equipment - Part 1-6: General requirements for basic safety and essential performance - Collateral standard: Usability EN 62366:2008 Medical devices - Application of usability engineering to medical devices
Software life-cycle processes	EN 62304:2008/AC: 2008 Medical device software - Software life cycle processes

■ EMC Guidance

1) This product needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided, and this unit can be affected by portable and mobile RF communications equipment.
2) Do not use a mobile phone or other devices that emit electromagnetic fields, near the unit. This may result in incorrect operation of the unit.
3) Caution: This unit has been thoroughly tested and inspected to assure proper performance and operation!
4) Caution: this machine should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, this machine should be observed to verify normal operation in the configuration in which it will be used.

Table 1

Guidance and manufacturer's declaration electromagnetic emissions		
The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure 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 RF 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	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table 2

Guidance and manufacturer's declaration electromagnetic immunity			
The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure 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	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV differential mode	Mains power quality should be that of a typical commercial or hospital environment.
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 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	<5% UT (>95% dip in UT) for 0.5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the device requires continued operation during power mains interruptions, it is recommended that the device be powered from an uninterruptible power supply or a battery.
Power frequency (50Hz/60Hz) magnetic field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typica location in a typical commercial or hospital environment.
NOTE: UT is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration electromagnetic immunity

The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure 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 Vrms 150 kHz to 80 Mhz	3 Vrms	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. **Recommended separation distance**
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 Ghz	3 V/m	$d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz where ***P*** is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and ***d*** is the recommended separation distance in metres (m). 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. B Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE 1At 80 MHz and 800 MHz, the higher frequency range applies.
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

A Field strengths from fixed transmitters, such as base stations for radio (cellular / cordless) telephones and land mobile radios, amateur radio, AM and FM radio broad-cast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the device is used exceeds the applicable RF compliance level above, the device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the device.

bOver the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

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 radiated RF 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 (transmittters) 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)		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	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.

NOTE 1 At 80MHz and 800MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

■ Table of Contents

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