

DT-2000 with Bluetooth EMC Guidance

Guidance and Manufacturer's Declaration - Electromagnetic Emissions		
The infrared forehead thermometer model DT-2000 series is intended for use in the electromagnetic environment specified below. 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 DT-2000 with Bluetooth 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 DT-2000 with Bluetooth is suitable for use in a typical home healthcare environment.
Harmonic emissions	Not applicable	
Voltage fluctuations	Not applicable	

Guidance and Manufacturer's Declaration - Electromagnetic Immunity			
The DT-2000 series thermometer is intended for use in the electromagnetic environment specified below. The user of the device should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Portable and mobile RF communications equipment should be used no closer to any part of the DT-2000C series including cables if applicable, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance
Conducted RF IEC 61000-4-6	3Vrms 150 kHz to 80 MHz	Not applicable	$d=1,2 \cdot P^{1/2}$ $d=1,2 \cdot P^{1/2}$ 80 MHz to 800MHz $d=1,2 \cdot P^{1/2}$ 800MHz to 2,7 GHz
Radiated RF IEC 61000-4-3	10V/m 80 MHz to 2,7 GHz 80% AM at 1kHz	10V/m	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 meters (m). Field strength from the fixer RF transmitters, as determined by an electromagnetic site survey, a. should be less than the compliance level in each frequency range and b. interference may occur in the vicinity of equipment with the following symbol: 

- a. Field strengths from fixed transmitter, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast 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 strengths 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 reorienting or relocating the device.
- b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.
- c. Portable and mobile RF communications equipment can affect performance.

WARNING: Electronic equipment may be influenced by Radio Frequency (RFI). Caution should be exercised with regard to the use of portable communications in the area around such equipment. 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. Degradation of the performance of this equipment could result. In a strong electromagnetic field, "Err" or erratic readings may result.

WARNING : This equipment shall not be used adjacent to or stacked with other equipment.

WARNING : Device is not for use aboard aircraft or near High Frequency Surgical Equipment or Radio Frequency shielded rooms, such as MRI (Magnetic Resonance Imaging) areas.

Guidance and Manufacturer's Declaration - Electromagnetic Immunity (cont.)

The DT-2000 series thermometer is intended for use in the electromagnetic environment specified below. 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) IEC61000-4-2	8kV contact 15kV air	8kV contact 15kV 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	2kV for power supply lines 1kV for input output lines	Not applicable	Mains power quality should be that of a typical home healthcare environment.
Surge IEC 61000-4-5	1kV line(s) to line(s) 2kVline(s) to earth	Not applicable	Mains power quality should be that of a typical home healthcare environment.
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.	Not applicable	Mains power is not applicable. The DT-2000 series is powered by battery and battery only.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30A/m	30A/m	Power frequency magnetic fields should be at the level characteristic of a typical location in a typical home healthcare environment.

Note UT is the a.c. mains voltage prior to the application of the test level

Recommended separation distances between portable and mobile RF communication equipment and the DT-2000 Series

The DT-2000 series thermometer is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled 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		
	150 KHz to 80 MHz d=1,2 P ^{1/2}	80 MHz to 800 MHz d=1,2 P ^{1/2}	800 MHz to 2,7 GHz d=2,3 P ^{1/2}
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 meters (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 80 MHz and 800 MHz 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.