

TAT-5000S-RS232-US EMC Guidance

Guidance and Manufacturer's Declaration-Electromagnetic Emissions

The infrared forehead thermometer model TAT-5000S series is intended for use in the electromagnetic environment specified below. The user of the TAT-5000S series should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment-guidance
RF emissions CISPR 11	Group 1	The TAT-5000S series thermometer uses no RF energy therefore any emissions are unlikely to cause any interference in nearby electronic equipment
RF emissions CISPR 11	Class A	The TAT-5000S series thermometer is suitable for use by a healthcare professional in a typical health care environment.
Harmonic emissions IEC 61000-3-2	Class A Not applicable	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Not applicable	

NOTE The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.

Guidance and manufacturer's declaration-electromagnetic immunity

The TAT-5000S series thermometer is intended for use in the electromagnetic environment specified below. The user of the TAT-5000S series 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	3Vrms 150 kHz to 80 MHz	3Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the TAT-5000S series including cables if applicable, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=1,2 \cdot P^{(1/2)}$ 80 MHz to 800MHz $d=1,2 \cdot P^{(1/2)}$ 800MHz to 2,7 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 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: 
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2,7 GHz	3V/m	
Proximity Fields from RF wireless communications equipment as defined in Table 9 of IEC 60601-1-2 Proximity Fields.	15 specific frequencies. Immunity level 9-28V/m	15 specific frequencies. Immunity level 9-28V/m	

Note 1 At 80MHz and 800MHz, the higher 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.

- 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 TAT-5000S series thermometer is used exceeds the applicable RF compliance level above, the TAT-5000S series thermometer should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the TAT-5000S.
- Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.
- Portable and mobile RF communications equipment can affect performance.

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

The TAT-5000S series thermometer is intended for use in the electromagnetic environment specified below. The user of the TAT-5000S series 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	±2kV for power supply lines ±1kV for input output lines	Mains power quality should be that of a typical health care environment.
Surge IEC 61000-4-5	±1kV line(s) to line(s) ±2kV line(s) to earth	Not applicable	Mains power quality should be that of a typical health care environment.
Voltage dips, short interruptions and voltage variations on power supply Input lines IEC 61000-4-11	0% UT (100% dip in UT) for 0,5 cycle. 0% UT (100% dip in UT) for 1 cycle. 70% UT (30% dip in UT) for 25/30 cycles. 0% UT (100% dip in UT) for 5 sec.	Not applicable	Mains power is not applicable. The TAT-5000S 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 health care environment.
Proximity magnetic field IEC 61000-4-39	134.2kHz @ 65A/m 13.56 MHz @ 7.5A/m	134.2kHz @ 65A/m 13.56 MHz @ 7.5A/m	

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 TAT-5000S Series

The TAT-5000S series forehead thermometer is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled or the user of the TAT-5000S series thermometer can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the TAT-5000S series thermometer 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.