



Electromagnetic compatibility information
Inhaler IN 500 (Model: NB-212C)
Inhaler IN 550 (Model: NB-210C)

Item number: 54520 (IN 500) / 54530 (IN 550)



HONSUN (NANTONG) Co., Ltd.
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PEOPLE'S REPUBLIC OF CHINA
SRN Manufacturer: CN-MF-000009428



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Electromagnetic Compatibility – Guidance and
Manufacturer’s Declaration


Guidance and manufacturer’s declaration – electromagnetic emissions		
The Inhalator IN 500 / IN 550 is intended for use in the electromagnetic environment specified below. The customer or the user of the Inhalator IN 500 / IN 550 should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR11	Group 1	The Inhalator IN 500 / IN 550 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 CISPR11	Class B	The Inhalator IN 500 / IN 550 is suitable for use in all establishments including domestic 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	



Guidance and manufacturer’s declaration – electromagnetic immunity			
The Inhalator IN 500 / IN 550 is intended for use in the electromagnetic environment specified below. The customer or the user of the Inhalator IN 500 / IN 550 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	± 8 kV contact ± 15 kV air	± 8 kV contact ± 15 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 and output lines	±2 kV for power supply lines ±1 kV for input and output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode	±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% U _T for 0.5 cycle (>95% dip in U _T) 40% U _T for 5 cycles (60% dip in U _T) 70% U _T for 25 cycles (30% dip in U _T) <5% U _T for 5 sec (>95% dip in U _T)	<5% U _T for 0.5 cycle (>95% dip in U _T) 40% U _T for 5 cycles (60% dip in U _T) 70% U _T for 25 cycles (30% dip in U _T) <5% U _T for 5 sec (>95% dip in U _T)	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Inhalator IN 500 / IN 550 requires continued operation during power mains dip and interruptions, it is recommended that the Inhalator IN 500 / IN 550 be powered by an uninterruptible power supply or a battery.
Power frequency (50/60Hz) Magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Proximity magnetic fields (IEC 61000-4-39)	30kHz, CW, 8A/m 134.2kHz, PM 2.1kHz, 65A/m 13.56MHz, PM 50kHz, 7.5A/m	not applicable	The EUT does not contain magnetically sensitive components or circuitry, so this test does not need to be evaluated.
NOTE: U _T is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration – electromagnetic immunity

The Inhalator **IN 500 / IN 550** is intended for use in the electromagnetic environment specified below. The customer or the user of the Inhalator **IN 500 / IN 550** 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	150kHz to 80MHz: 3V _{rms} 6 V _{rms} (in ISM and amateur radio bands) 80% Am at 1kHz	150kHz to 80MHz: 3V _{rms} 6 V _{rms} (in ISM and amateur radio bands) 80% Am at 1kHz	Portable and mobile RF communications equipment should be used no closer to any part of the Inhalator IN 500 / IN 550 including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distances: d = 1.2 · √p d = 2.0 · √p 80 MHz to 800MHz d = 1.2 · √p 800 MHz to 2.7GHz d = 2.3 · √p 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 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: 
Radiated RF IEC 61000-4-3	10V/m 80% Am for 1kHz	10V/m 80% Am for 1kHz	

NOTE 1: At 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 broadcast and TV broadcast cannot be predicted theoretical y 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 Inhalator **IN 500 / IN 550** is used exceeds the applicable RF compliance level above, the Inhalator **IN 500 / IN 550** 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.

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

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Recommended separation distances between portable and mobile RF communications equipment and the device

The Inhalator **IN 500 / IN 550** 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 (transmitters) and the Inhalator **IN 500 / IN 550** 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 (outside ISM and amateur frequency bands $d = 0.6 \cdot \sqrt{P}$)	80 MHz to 800 MHz $d = 1.2 \cdot \sqrt{P}$	800 MHz to 2.7 GHz $d = 2.3 \cdot \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.69	3.69	7.38
100	11.67	11.67	23.33

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.

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.

Radiated RF IEC 61000-4-3 (Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment)	Test Fre- quency (MHz)	Modulation b)	Maximum output power b) (W)	Distance (m)	Immunity Test Level (V/m)
	385	Pulse modula- tion b) 18 Hz	1.8	0.3	27
	450	FM c) ± 5 kHz deviation 1 kHz sine	2	0.3	28
	710	Pulse modulation b) 217 Hz	0.2	0.3	9
	745				
	780				
	810	Pulse modulation b) 18 Hz	2	0.3	28
	870				
	930				
	1720	Pulse modulation b) 217 Hz	2	0.3	28
	1845				
	1970				
	2450	Pulse modulation b) 217 Hz	2	0.3	28
	5240				
	5500				
	5785				

Note: If necessary to achieve the Immunity Test Level, the distance between the transmitting antenna and the ME Equip-
ment or ME System may be reduced to 1 m.
The 1 m test distance is permitted by IEC 61000-4-3.
b) The carrier shall be modulated using a 50% duty cycle square wave signal.
c) As an alternative to FM modulation, 50% pulse modulation at 18 Hz may be used because while it does not represent
actual modulation, it would be worst case.

The Manufacturer should consider reducing the minimum separation distance, based on Risk Management, and using
higher Immunity Test Levels that are appropriate for the reduced minimum separation distance.
Minimum separation distances for higher Immunity Test Levels shall be calculated using the following equation:
 $E = \frac{6}{d} \sqrt{P}$
Where P is the maximum power in W, d is the minimum separation distance in m,
and E is the Immunity Test Level in V/m.