ELECTROMAGNETIC DISTURBANCES INFORMATION

WARNING
- Portable RF communications equipment should be used no closer than 30 cm (12 inches) to any part of the [CITIZEN COMPRESSOR NEBULIZER GC806 (abbr."GC806")], including cables specified.
- Use of this equipment adjacent to or stacked with other equipment should be avoided.
- Use of accessories and options other than those specified (other than CITIZEN original parts) could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment.

Guidance and manufacturer's declaration - electromagnetic emissions

The [GC806] is intended for use in the electromagnetic environment specified below. The customer or the user of the [GC806] should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The [GC806] 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 [GC806] 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	

Guidance and manufacturer's declaration - electromagnetic immunity

The [GC806] is intended for use in the electromagnetic environment specified below. The customer or the user of the [GC806] 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/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 to line ±2 kV line to earth	±1 kV line to line	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply IEC 61000-4-11	0% U_T 0.5 cycle	0% U_T 0.5 cycle	Mains power quality should be that of a typical commercial or hospital environment. If the user of the [GC806] requires continued operation during power mains interruptions, it is recommended that the [GC806] be powered from an uninterruptible power supply or a battery.
	0% U_T 1 cycle	0% U_T 1 cycle	
	70% U_T 25/30 cycle	70% U_T 25/30 cycle	
	0% U_T 250/300 cycle	0% U_T 250/300 cycle	
Power frequency (50/60 Hz) 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.

Note: U_T is the A.C. mains voltage prior to application of the test level.

Guidance and manufacturer's declaration - electromagnetic immunity

The [GC806] is intended for use in the electromagnetic environment specified below. The customer or the user of the [GC806] should assure that it is used in such an environment.

			Portable and mobile RF communications equipment should be used no closer to any part of the [GC806], including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Conducted RF IEC 61000-4-6	3 Vrms, 6 Vrms* 150 kHz to 80 MHz	3 Vrms, 6 Vrms*	**Recommended separation distance** $d = 1.2\sqrt{P}$ 3 Vrms $d = 1.0\sqrt{P}$ 6 Vrms* * (in ISM and amateur radio bands)
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.7 GHz	10 V/m	$d = 0.6\sqrt{P}$ 80 MHz 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 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 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 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 [GC806] is used exceeds the applicable RF compliance level above, the [GC806] should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the [GC806].
b). Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the [GC806]

The [GC806] is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the [GC806] can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and [GC806] 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 3 Vrms $d = 1.2\sqrt{P}$	150 kHz to 80 MHz 6 Vrms $d = 1.0\sqrt{P}$	80 MHz to 2.7 GHz $d = 0.6\sqrt{P}$
0.01	0.12	0.1	0.06
0.1	0.38	0.32	0.19
1	1.2	1	0.6
10	3.8	3.2	1.9
100	12	10	6

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 immunity

The [GC806] is intended for use in the electromagnetic environment specified below. The customer or the user of the [GC806] should assure that it is used in such an environment.

Immunity to proximity fields from RF wireless communications equipment IEC 61000-4-3	Test Frequncy (MHz)	Band a) (MHz)	Service a)	Modulation b)	Maximum power (W)	Distance (m)	IMMUNITY TEST LEVEL (V/m)
	385	380-390	TETRA 400	Pulse modulation b) 18 Hz	1.8	0.3	27
	450	430-470	GMRS 460, FRS 460	FM c) ± 5 kHz deviation 1 kHz sine	2	0.3	28
	710 745 780	704-787	LTE Band 13, 17	Pulse modulation b) 217 Hz	0.2	0.3	9
	810 870 930	800-960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation b) 18 Hz	2	0.3	28
	1720 1845 1970	1700-1900	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation b) 217 Hz	2	0.3	28
	2450	2400-2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation b) 217 Hz	2	0.3	28
	5240 5500 5785	5100-5800	WLAN 802.11 a/n	Pulse modulation b) 217 Hz	0.2	0.3	9

NOTE If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the [GC806] may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

a). For some services, only the uplink frequencies are included.
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.

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Immunity test	Test frequency	Modulation	IMMUNITY TEST LEVEL (A/m)
Proximity magnetic fields IEC 61000-4-39	30 kHz [a]	CW	8
	134.2 kHz	Pulse modulation [b] 2.1 kHz	65 [c]
	13.56 MHz	Pulse modulation [b] 50 kHz	7.5 [c]

a) This test is applicable only to [GC806] intended for use in the HOME HEALTHCARE ENVIRONMENT.
b) The carrier shall be modulated using a 50 % duty cycle square wave signal.
c) r.m.s., before modulation is applied.