

### Guidance and manufacture'declaration - electromagnetic emissions

The device is intended for use in the electromagnetic environment specified below. The customer or the user has to assure that it is used in such environment.

| Emissions test   | Compliance     | Electromagnetic environment - guidance   |
|--|----------------|--|
| RF emissions CISPR11                                     | 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.<br><br>The device is suitable for use in all establishments including those directly connected to the public low-voltage power supply network that supplies to buildings power used for domestic purposes. |
| RF emissions CISPR11                                     | Class B        |  |
| Harmonic emissions<br>IEC 61000-3-2                      | Not applicable |  |
| Voltage fluctuations/ Flicker<br>emissions IEC 61000-3-3 | Not applicable |  |

### Guidance and manufacture'declaration - electromagnetic immunity


The device is intended for use in the electromagnetic environment specified below. The customer or the user has to assure that it is used in such environment.

| Immunity test  | IEC 60601<br>Test level   | Compliance<br>level                                       | Electromagnetic environment - guidance  |
|--|---|---|---|
| Electrostatic<br>discharge (ESD)<br>IEC 61000-4-2  | ±8kV direct<br>& indirect contact;<br>±15kV air discharge   | ±8kV direct<br>& indirect contact;<br>±15kV air discharge | 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<br>IEC 61000-4-4   | ±2 kV for<br>power supply lines   | not applicable  | not applicable (for INTERNALLY POWERED ME EQUIPMENT)  |
| Surge<br>IEC 61000-4-5   | ± 1 kV line(s)<br>to line(s)  | not applicable  | not applicable (for INTERNALLY POWERED ME EQUIPMENT)  |
| Voltage dips, short interrup-<br>tions and voltage variations<br>on power supply input lines<br>IEC 61000-4-11 | <5% $U_T$ (>95% dip in $U_T$ ) for<br>0.5 cycle; 40% $U_T$ (60% dip in<br>$U_T$ ) for 5 cycles; 70% $U_T$ (30%<br>dip in $U_T$ ) for 25 cycles; <5%<br>$U_T$ (>95% dip in $U_T$ ) for 5 sec | not applicable  | not applicable (for INTERNALLY POWERED ME EQUIPMENT)  |
| Power frequency<br>(50Hz/60Hz) magnetic field<br>IEC 61000-4-8   | 10V/m   | 10V/m   | Power frequency magnetic fields should be at levels characteristic of a typical location in typical commercial or hospital environment.       |

NOTE:  $U_T$  is the a.c. mains voltage prior to application of the test level.

## Guidance and manufacture' declaration - electromagnetic immunity

The device is intended for use in the electromagnetic environment specified below. The customer or the user has to assure that it is used in such environment.

| Immunity test             | IEC 60601 Test level | Compliance level | Electromagnetic environment - guidance   |
|---------------------------|----------------------|------------------|--|
| Radiated RF IEC 61000-4-3 | 10V/m & table 9      | 10V/m & table 9  | Portable and mobile RF communications equipment should be used not 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: $d=1.167\sqrt{P}$ 80 MHz to 800 MHz $d=2.333\sqrt{P}$ 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, <sup>a</sup> should be less than the compliance level in each frequency range. <sup>b</sup> 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.

<sup>a</sup> 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 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.

<sup>b</sup> Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V] V/m.

### Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment (Table 9)

| Test Frequency (MHz) | Band <sup>a</sup> (MHz) | Service <sup>a</sup>   | Modulation <sup>b</sup>                    | Max. power (W) | Distance (m) | IMMUNITY TEST LEVEL (V/m) |
|----------------------|-------------------------|--|--|----------------|--------------|---------------------------|
| 385                  | 380-390                 | TETRA400   | Pulse modulation b) 18Hz <sup>b</sup>      | 1.8            | 0.3          | 27                        |
| 450                  | 430-470                 | GMRS 460, FRS 460  | FM <sup>c</sup> ±5kHz deviation, 1kHz sine | 2              | 0.3          | 28                        |
| 710                  | 704-787                 | LTE Band 13,17   | Pulse modulation <sup>b</sup> 217Hz        | 0.2            | 0.3          | 9                         |
| 745                  |                         |  |  |                |              |                           |
| 780                  |                         |  |  |                |              |                           |
| 810                  | 800-960                 | GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5         | Pulse modulation <sup>b</sup> 18Hz         | 2              | 0.3          | 28                        |
| 870                  |                         |  |  |                |              |                           |
| 930                  |                         |  |  |                |              |                           |
| 1720                 | 1700-1990               | GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4,25; UMTS | Pulse modulation <sup>b</sup> 217Hz        | 2              | 0.3          | 28                        |
| 1845                 |                         |  |  |                |              |                           |
| 1970                 |                         |  |  |                |              |                           |
| 2450                 | 2400-2570               | Bluetooth, WLAN 802.11 b/g/n, RFID 2450, LTE Band 7            | Pulse modulation <sup>b</sup> 217Hz        | 2              | 0.3          | 28                        |
| 5240                 | 5100-5800               | WLAN 802.11 a/n  | Pulse modulation <sup>b</sup> 217Hz        | 0.2            | 0.3          | 9                         |
| 5500                 |                         |  |  |                |              |                           |
| 5785                 |                         |  |  |                |              |                           |

NOTE: If it is necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

<sup>a</sup> For some services, only the uplink frequencies are included.

<sup>b</sup> The carrier shall be modulated using a 50 % duty cycle square wave signal.

<sup>c</sup> As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because it does not represents actual modulation. It would be worst case.



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