Difference between the keyboard and non-keyboard versions

- The keyboard version has a plastic housing with holes in the front surface for the keys of the keyboard. The non-keyboard housing has a closed front surface. The housings are made of a plastic material that contains no metal or other materials that provide shielding or have any other impact for compliance for radio, emissions and immunity requirements.
- The keyboard version contains additional to the non-keyboard version plastic key caps made of the same material as the housing and a silicone mat to protect the electronics from water entering from the outside world. The plastic keyboard caps and the silicone mat contain no metal or other materials that provide shielding or have any other impact for compliance for radio, emissions and immunity requirements.
- The keyboard version contains the additional keyboard interface electronics and the keyboard switches. The keyboard switch has a very small metal top with a hole for the actuator. The effective metal surface of the switch is approximately 6.8 square mm. The metal surface of the switch has no electrical connections to anything.
  Placement of the keyboard interface and the switches provide no additional shielding or other influence on the RF properties of the reader. The influence of the keyboard to the tuning of the RF circuit is negligible: both versions are tuned with the exact same values for optimum tuning.
- Preliminary tests were performed on all keyboard and non-keyboard models with RF amplifier with all IO interfaces to determine worst case models. No distinct difference between the models was found. The versions with keyboard are determined worst case models because they contain the more elaborate hardware.

Regulatory testing is performed on all four IO versions of the RF amplified keyboard reader. Worst case situations are listed in the report.

Difference between RF amplified and non RF amplified versions

(50XX and 51XX)

- Model 50XX contains an integral RF amplifier that provides 6 dB gain. Model 51XX contains no integral RF amplifier.
- Model 50XX and model 51XX are connected to the exact same antenna circuit, through the exact same matching components with the exact same values.
- The RF amplifier is constructed as a class B amplifier for 13.56 MHz signals. The amplifier contains no specific filtering circuits for limiting harmonics or other RF noise.
- The RF amplifier has no effect on the crystal controlled frequency of operation (13.56 MHz)

Regulatory testing of model 51XX (without RF amplifier) are covered by the test results of model 50XX (with RF amplifier) due to the lower emission levels of model 51XX as a result of the amplified RF signal and RF noise levels, added harmonic content of the class B amplifier and higher RF power load on the power supply circuit of model 50XX.

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