S40 contactless reader (EUT) RF Exposure:-

The **S40 contactless reader** is intended as a fixed device. A person's extremity (fingers) can come in to contact with the keypad which is approx. 20mm from the radiating pcb coil.

Evaluation is for exposure potential against the Exclusion limits given in KDB447498 section 4.3.1.

Exclusion requirements are based upon 10g SAR exclusion for extremities.

Equation of 4.3.1. part 1A Transposed is:

$$\text{Exclusion in mW} = ((\text{Threshold} / (\sqrt{F}) * D$$

where: Threshold = 7.5 for 10g SAR Extremities (or 3 for 1g SAR Body worn)
F = Frequency in GHz (0.1GHz)
D = Separation distance in mm (50mm)

Threshold in mW for 13.56MHz is based on equation above and 4.3.1. part2A

= **1185.854123 mW**

Further modified by 4.3.1. part 3A

= 2215 mW (at 50mm)

And further modified by part 4.3.1. part 3B (<50mm distance under 100MHz)

= **2215 / 2** (50mm exclusion value divided by 2)

Therefore, although the specified separation distance is 20mm for the EUT, exclusion for 13.56MHz frequency and a 20mm separation distance is based on the stated 50mm distance requirement calculation within KDB447498 multiplied by ½.

= 1108mW.

As measured values for the S40 contactless reader EUT were:

Worst case Peak power, P = 0.216mW (-16.65dBm).
And antenna gain included in field strength measurement, the EUT is excluded from RF Exposure / SAR testing requirements.