Exhibit: RF Exposure – FCC

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RF Exposure – FCC

The EUT contains a 0.125 MHz and 13.56 MHz RFID reader and a 2400 – 2483.5 MHz DTS transmitter. The minimum separation distance from the radiating structure to the extremity of a user is 5 mm. This distance is the shortest distance from any antenna to the surface as stated by the manufacturer during normal operation.

The firmware does not guarantee simultaneous operation will not occur. Therefore SAR test exclusion was evaluated according to FCC KDB 447498 D01 v06 Sections 4.3.2 and 4.3.1.

General SAR test exclusion guidance:

2400 – 2483.5 MHz Transmitter

As per FCC KDB 447498 Section 4.3.1 a), the standalone 10-g extremity SAR Test Exclusion Threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm is determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] [$\sqrt{f_{(GHz)}}$] ≤ 7.5

Where:
$f_{(GHz)}$ is the RF channel transmit frequency in GHz

0.125 MHz and 13.56 MHz Transmitter

As per FCC KDB 447498 Section and 4.3.1 c) 2), the 10-g extremity SAR Test Exclusion Threshold is given by

{[Power allowed at *numeric threshold* for 50 mm in step 4.3.1 a)] + [(test separation distance – 50 mm)·($f_{(MHz)}$/150)]} { ½ [1 + log(100/$f_{(MHz)}$)] }mW

Where:
Test separation distance is 50 mm and f = 100 MHz.

Which results in
½ [Power allowed at *numeric threshold* for 50 mm in step 4.3.1 a)] mW

SAR Calculations: 2402 – 2480 MHz DTS transmitter

Peak conducted power was measured to be -30.6 dBm (0.00087 mW). At a separation distance of 5 mm, this results to:

[0.00087 mW / 5 mm]*[√(2.480 GHz)] = 0.00027 =0.0 ≤ 7.5

Standalone SAR Exclusion Threshold condition is met with peak conducted power.

SAR Calculations: 0.125 MHz and 13.56 MHz transmitter

The power allowed for *numeric threshold* of 7.5, for f = 0.1 GHz, and for a min. test distance of 50 mm

$$\frac{(max.power, mW)}{(min.test\ distance, mm)} \times \sqrt{f} = 7.5$$

$$(max.power, mW) = \frac{7.5\ \times 50\ mm}{\sqrt{0.1}}$$

$$(max.power, mW) = 1185.8\ mW$$

And therefore, ½ power allowed is 592.9 mW

The EIRP of the two transmitters were calculated from field strength at 3 m using Equation 22 and guidance form Annex G of ANSI C63.10

EIRP = E_{Meas} – 95.2

The 0.125 MHz transmitter have a field strength of 69.5 dBuV/m @ 3 m

EIRP (0.125 MHz transmitter) = 69.5 – 95.2 = -25.7 dBm = 0.003 mW

The 13.56 MHz transmitter have a field strength of 68.6 dBuV/m @ 3 m

EIRP (13.56 MHz transmitter) = 68.6 – 95.2 = -26.6 dBm = 0.002 mW

Standalone SAR Exclusion Threshold condition for both 0.125 MHz and 13.56 MHz RFID are met with peak EIRP.

Simultaneous transmission SAR test exclusion

As per FCC KDB 447498 Section and 4.3.2, SAR test exclusions applies if the sum of 10-g standalone SAR of all simultaneously transmitting antennas is within the extremities SAR limit of 4 W/kg.

As per FCC KDB 447498 Section and 4.3.2 b) the standalone SAR value is estimated according to the following:

[(*max. power of channel, including tune-up tolerance, mW)* / (*min. test separation distance, mm)]·[*$\sqrt{f_{(GHz)}}$*/x]* W/kg, for *test separation distances* ≤ 50 mm;

where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

For 2402 – 2480 MHz transmitter:

$$[0.00087 \text{ mW} / 5 \text{ mm}]*[\sqrt{(2.480 \text{ GHz})}/18.75] = 1.46 \times 10^{-5} \text{ W/kg}$$

For 13.56 MHz transmitter:

$$[0.002 \text{ mW} / 5 \text{ mm}]*[\sqrt{(0.01356 \text{ GHz})}/18.75] = 2.72 \times 10^{-6} \text{ W/kg}$$

For 0.125 MHz transmitter:

$$[0.003 \text{ mW} / 5 \text{ mm}]*[\sqrt{(0.000125 \text{ GHz})}/18.75] = 3.21 \times 10^{-7} \text{ W/kg}$$

The sum of 10-g standalone SAR for all transmitters are 1.77×10^{-5} W/kg which is less than 4 W/kg.