Calculation result of H field for A3LSMX810

Model EUT: SM-X810

It is the calculation result of the H-Field above the S-PEN when the EUT is charging the S-PEN.

The EUT can be charged only when the S-PEN is attached.

The H-Field was calculated by applying the Biot–Savart law to find the ambient magnetic field generated by the current, with the following parameters

Biot–Savart law

$$H = \frac{2\pi R^2 I}{4\pi (Z^2 + R^2)^{3/2}} * \frac{N}{\mu r}$$

Parameter	Value[Main Coil]	Value[Sub coil]
R is the Radial of coil to the subject of calculation [meter]	0.0193	0.0132
I Is the current level flowing in coil [mA]	0.05	0.05
Z is the vertical component away from the coil in rear side[meter]	0.00845	0.00845
N is Coil with N Turns	38	42
µ is relative magnetic permeability of FPCB	50	50
Calculation Results H-Field	0.75675	0.95041
Corrected Calculation Results	0.19297	0.24236
FCC MPE Limit H-Field [A/m]	1.63	

Note:

1. Height of S-PEN: 8mm

2. The z-axis distance just above the charging FPCB is 0.45 mm

3. Average time of FCC's MPE limit: 30 minutes

4. It will take **15 minutes** to charge up to 100% if Battery is 0 %.

5. Operational correction factor for the worst-case charging operation conditions is:

Operational Correction factor (applied over 30 minutes) = 0.5

H-Field Measurement Result for S-PEN WPT

The Main coil Maximum Corrected Meas. Data [A/m]	The Sub coil Maximum Corrected Meas. Data [A/m]
0.1794	0.1859

Conclusion:

Calculated results in the actual use mode show a good correlation with the measured results.