FCC §1.1307 (b) & §2.1093 – RF EXPOSURE

Applicable Standard

According to FCC §2.1093 and §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance v06, clause 4.3. General SAR test exclusion guidance:

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):
1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f_{(MHz)})]$
2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by ½
  3) SAR measurement procedures are not established below 100 MHz.

For worst case:

The SAR Exclusion Threshold Level for 13.56MHz when the minimum test separation distances ≤ 50 mm:

$$= [474*(1 + \log(100/f_{(MHz)}))]/2 = 443mW$$

Use the maximum E-field strength (54.96dBuV/m@3m) for the RF exposure evaluation

$E[dB\mu V/m] = EIRP[dBm] + 95.2$ for distance 3m, so the EIRP=54.96dBuV/m-95.2=-40.24dBm

The antenna gain is 0dBi

The maximum tune-up conducted power = -40.24dBm = 0.00009mW, which less than 443mW@13.56MHz Exclusion Threshold Level.

So the stand-alone SAR evaluation can be exempted.