RF exposure Estimation

1. Introduction

Product: Body Fat Analyzer
Model no.: GBF-1714-F
FCC ID: 2AOJNGBF-1714-F
The EUT is Body Fat Analyzer, which contain Bluetooth function inside.

2. Limit and Guidelines on Exposure to Electromagnetic Fields

According to§15.247(e)(i) and §1.1307(b)(1), 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 KDB558074 D01 Mobile Portable RF Exposure v05r02, no SAR required if power is lower than the flowing threshold:
The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]
$[\sqrt{f(GHz)}]$ ≤ 3.0 for 1-g SAR[30] and ≤ 7.5 for 10-g extremity SAR, [30] where
- • f(GHz) is the RF channel transmit frequency in GHz
- • Power and distance are rounded to the nearest mW and mm before calculation[25]
- • The result is rounded to one decimal place for comparison
- • 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz.

[30]This is equivalent to the formula written as: [(max. power of channel, including tune-up tolerance, mW)/(60/$\sqrt{f(GHz)}$ mW)][20 mm/(min. test separation distance, mm)] ≤ 1.0 for 1-g SAR; also see Appendix A for approximate exclusion threshold numerical values at selected frequencies and distances.

3. Calculation method

10g SAR test exclusion thresholds:
[(max. power of` channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] $\cdot[\sqrt{f(GHz)}]$ ≤ 7.5

Conducted Power + tune up tolerance =17.0dBm= 50.12mW
Distance = 50 mm
f = 2.462 GHz

[50.12/50] * SQRT (2.462) =1.573
1.573≤ 7.5

1g SAR test exclusion thresholds

[(max. power of channel, including tune-up tolerance, mW)/(60/√f(GHz) mW)]
·[20 mm/(min. test separation distance, mm)] ≤ 1.0 for 1-g SAR

Conducted Power + tune up tolerance =17.0dBm= 50.12mW
Distance = 50 mm
f = 2.462 GHz

[50.12]/60 SQRT (2.462) 20 =0.266
0.266≤ 1

Therefore, excluded from SAR testing.

- TÜV SÜD Shenzhen LTD. -
Reviewed by: Prepared By:

Laurent Yuan /EMC Project Manager   Mark Chen/EMC Project Engineer
Date: 2019-06-18   Date: 2019-06-18