Calculation:
General SAR test exclusion for a Communication Module

Type identification: EK042
FCC ID: 5669C-EK042

Subject of Investigation

According to 47CFR §2.1093 the Communication Module (FCC ID: 5669C-EK042) from Miele & Cie. KG is defined as a module and can be implemented in portable / mobile / fixed host devices.
The EUT incorporates a PCB antenna and a fixed separation distance of 35 mm to the user via the housing of the EUT shall be maintained. The General SAR test exclusion guidance in document 447498 D01 General RF Exposure Guidance v06 states that for 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$\frac{P_{max}, mW}{d_{min}, mm} \cdot \sqrt{f, GHz} < 3.0\ (1 - g\ SAR)$$

P_{max},mw — is the maximum conducted output power, including tune-up tolerance in mW

d_{min}, mm — is the minimum separation distance between antenna or radiating structures to any part of the body or extremity of a user or bystander in mm

f, GHz — is the RF channel transmit frequency in GHz

1-g SAR — standalone 1-g head or body SAR evaluation for general population exposure conditions

10-g SAR — standalone 10-g extremity SAR evaluation for general population exposure conditions

When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) KDB447498 D01 General RF Exposure Guidance v06 is applied to determine SAR test exclusion.

General SAR test exclusion calculation

In accordance to the **447498 D01 General RF Exposure Guidance v06**:

P: 17.6 dBm = 57.544 mW (Maximum conducted output power*)

T: +/- 0.6 dB = 1.148 (tune-up range, as declared by the applicant)

d: 35 mm

f: 2437 MHz* (frequency of the worst-case emission)

* 17.6 dBm @ 2.437 GHz is the maximum conducted output power as measured in test report 211717E1 by Phoenix Testlab GmbH.

$$\frac{57.544mW \cdot 1.148}{35mm} \cdot \sqrt{2.437GHz} = 2.949 < 3.0$$

Therefore, the EUT meets the stand-alone SAR Test Exclusion of KDB447498 D01 for 1-g head or body and 10-g extremety SAR.