RF Exposure

The equipment under test (EUT) is a Smart Helmet with Bluetooth 5.0 (Single Mode function EDR) operating in 2402-2480MHz. The EUT is powered by DC 3.7V by rechargeable battery, the Bluetooth function was closed when charging the battery. For more detail information pls. refer to the user manual.

Bluetooth Version: 5.0 EDR mode.
Antenna Type: Integral antenna.
Antenna Gain: -6.17dBi.
Modulation Type: GFSK, π/4DQPSK, 8DPSK.
The nominal conducted output power specified: -0.17dBm (+/-3dB)
The nominal radiated output power (e.i.r.p) specified: -6dBm (+/-3dB)

According to the KDB 447498 V07:

The Maximum peak radiated emission for the EUT is 91.5 dBμV/m at 3m in the frequency 2402MHz
The EIRP = [(FS*D) ^2 / 30] mW = -3.73dBm
which is within the production variation.

The Minimum peak radiated emission for the EUT is 86.3 dBμV/m at 3m in the frequency 2480MHz
The EIRP = [(FS*D) ^2 / 30] mW = -8.93dBm
which is within the production variation.

The maximum conducted output power specified is 2.83dBm = 1.919mW
The source- based time-averaging conducted output power
=1.919* Duty cycle mW <1.919 mW(Duty cycle <100%)
The maximum ERP specified is: -3 - 2.15 = -5.15dBm = 0.305mW

The SAR Exclusion Threshold Level:

P_{th}(mW) = ERP_{20cm} * (d/20cm) ^{x} (X= $-\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right)$)

= 3060 * $(0.5/20)^{1.9}$ mW

= 2.72 mW

Since max. power of the source-based time-averaging conducted output power and effective radiated power (ERP) is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.